

CIMOR

CUSTOMER INFORMATION MANAGEMENT, OUTCOMES & REPORTING

IMPLEMENTATION PLAN

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&
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EXECUTIVE SUMMARY

In September of 1999, The State of Missouri Department of Mental Health (DMH) issued a Request for Proposal to replace its current information systems. In September of 2000 it selected iServ Systems, Inc. (iServ) of Seattle, Washington to provide such a replacement.

As it inaugurated the effort to implement what is now known as the Customer Information Management, Outcomes and Reporting (CIMOR) project, the Department set a clear mission:

“To define, implement, and maintain an integrated Department-wide information system which produces accurate clinical, outcome, cost and all other relevant information to provide decision support and quality service for the State of Missouri Department of Mental Health customers and stakeholders.”

CIMOR embodies this mission by delivering the means to effectively collect, provide and manage information related to client needs and services, as well as provider activities, at the point of contact. This will actively support more efficient and effective delivery and coordination of client-centered services. It will also enable the Department and its providers to aggregate and process information needed to bill for services, manage allocations and proactively address the requirements of payers and regulators. Designed specifically as tool for decision support, CIMOR will enhance the ability to analyze cost of services delivered, and understand the impact of level of service on outcomes. In sum, it will allow DMH managers and stakeholders to clearly see how well the Department is meeting its commitment to garner and manage its resources, optimize its capacity to serve the people of Missouri and maximize the quality of the outcomes of the services it provides.

To accomplish this CIMOR subsystems, modules and special purpose databases will provide extensive automated support for managing enrollment, clinical, service, provider and outcomes—related information. Built upon a unified data and transaction set in compliance with HIPAA and other government standards, CIMOR is based on leading edge technology. This will enable ready but highly secure access to information by those who need and are authorized to use it. In short, as described in this Implementation Plan and as it will be deployed, CIMOR represents not only a replacement of legacy systems but also a considerable addition to the Department’s capacity to manage information on behalf of all of its constituents.

The CIMOR system and its strategic implementation are designed to accrue increasing benefits over time to the Department, its consumers, providers and public stakeholders.

From the perspective of the Department, these benefits include:

- Full HIPAA compliance.
- Consistent client-centered, clinical and cost data for management decision support.
- Enhanced data capture and availability for improved CQI and outcomes reporting.
- Enhanced ability to meet external accreditation and regulatory requirements.
- Improved revenue capture / improved utilization of General Revenue (GR) funds via a streamlined DMH Central Financial Clearing House

From the consumer's perspective, these benefits include:

- System compliance with HIPAA, ADA and other requirements ensuring confidentiality / privacy.
- System-wide sharing of critical information related to treatment services and supports.
- Reduced administrative time and resources required for enrollment, screening, and similar processes.
- Better service coordination and improved outcomes.

From the provider perspective, the benefits include:

- Clinical decision support facilitated by on-line, real-time access to client information.
- Reduction in duplicative administrative data entry processes.
- Improved workflow efficiencies with resultant costs reductions.
- Streamlined billing and claims processing.

From the public stakeholder's perspective (e.g., legislature, Mental Health Commission), the benefits include:

- Accessible and consistent client-centered, clinical and financial data for decision support and planning.
- Standards-based outcomes data available for measuring value and quality of DMH performance.

The CIMOR Implementation Plan describes in detail the scope of the project, the project team, the project management process, the deliverables and payment schedule and the communications plan (Chapters 1 and 2). Chapter 3 includes the description of the Standards used to inform the entire project and how those standards have been incorporated into the CIMOR system. A summary of the operational environment in which CIMOR is to be deployed is presented in Chapter 4. The process of functional analysis that leads to the development of user requirements and then to technical specifications for CIMOR modules is described in Chapter 5. Chapter 6 is a technical discussion of CIMOR subsystems and includes more detailed description of the logical model that drives configuration/development and deployment.

Confidentiality and security issues have wide impact on the accessibility of information across the Department. Confidentiality policy and technical strategy and tools for handling security issues are discussed in Chapter 7.

The CIMOR system will need to interface with numerous existing systems within the State, many external to the DMH. Chapter 8 identifies these systems and presents preliminary requirements for communications between them and CIMOR. Chapter 9 discusses hardware and infrastructure requirements for the entire CIMOR system.

The issues relating to converting data from the existing legacy systems to the CIMOR platform are listed in Chapter 10. A strategy for resolving these issues to effect an orderly transition to the new system is described.

System configuration and deployment into the DMH facilities and central operational environment are the subjects of Chapters 11 and 12. The resources required by the Department and its contractors, as well as the timeline covering the project duration are summarized.

Training and customer (user) support are described in Chapters 13 and 14.

Chapter 15 presents several optional components of the iServ Systems product line. The framework for incorporating these optional components exists in the deliverables described in the previous chapters.

The Implementation Plan is more than a roadmap to reaching the overall goals to be achieved in the CIMOR project. To the extent possible at this early phase, content and design details are presented as would typically be found in a requirements or technical specification document. In each Chapter of this document where issues remain outstanding, those issues are noted and strategies for resolution are described.

CHAPTER 1 – PROJECT DEFINITION

Summary

The CIMOR Project mission is “to define, implement, and maintain an integrated Department-wide information system which produces accurate clinical, outcome, cost and all other relevant information to *provide decision support* and quality service for the State of Missouri Department of Mental Health customers and stakeholders.” (*A Strategic Plan for Information Technology – July 1997*) To this end, the CIMOR system as described herein fulfills that mission as the replacement for current facility and Central Office information systems supporting both the business and decision support needs for all of DMH.

The CIMOR Project is informed by and congruent with the Department’s strategic planning initiatives as presented in “A Strategic Plan for Information Technology – July 1997”. The project contributes to the attainment of several strategic goals and objectives that were identified during the development of that plan, including the following:

- Enable the DMH to provide quality services and supports that will improve client outcomes and serve the interests of the public.
- Provide detailed clinical and service information on all clients.
- Respond to the intense information requirements of different management and payment structures, including managed care, from both the payer and the provider perspective.
- Provide the ability to determine actual cost of doing business.
- Maximize the potential for increased revenues.
- Eliminate or minimize the potential for the loss of revenues due to inefficient and/or duplicative billing processes.
- Facilitate the integration of cross-division and cross-facility information sharing.
- Provide an information continuum that promotes and preserves data integrity as well as accurate and timely reporting.
- Respond to increasing expectations for system accountability by multiple stakeholders.
- Maximize information access within the Department for all stakeholders.
- Maintain an information environment that provides comprehensive management data and decision support.

A. Project Scope

During the months of October 2000 through January 2001, the CIMOR Implementation Team conducted multiple informational meetings and interviews with members of the Department's operational divisions. The conclusions/findings of those meetings served to inform and define the CIMOR Project with respect to its scope and priorities. In addition, focused discussions with the CIMOR Project Team have resulted in an adoption of the overall project goals. These goals include the following:

- A clear project scope and schedule of deliverables,
- The establishment and maintenance of an information environment that facilitates management of data / decision support and supports quality improvement activities,
- Early enhancement of operations with low risk, high benefit changes in DMH operations,
- Maximizing the potential for increased revenues while minimizing potential for loss of revenues,
- Maximizing information access for all DMH stakeholders,
- The creation of a technical foundation that enables growth and increasing benefit over time.

The scope of the CIMOR project is detailed in the Chapters that follow. In summary the Scope includes:

1. Analysis of the Department's existing operational and administrative support systems, their functionality and data sets. [See Chapter 5.]
2. Analysis of the "role functions" and associated core processes (workflows) to be supported in those operational and administrative support systems. [See Chapter 5.]
3. Comprehensive content, functional requirements, technical specifications and designs as required to configure and to deploy CIMOR. [See Chapter 6.]
4. Specification and adoption of data, transaction and security standards [HIPAA, MHSIP, JCAHO, HCFA, SAMHSA, Missouri State, and project specific standards] as well as technical communication standards (e.g., XML) to be incorporated in CIMOR. [See Chapter 3.]
5. Construction/configuration of a working model of CIMOR to include abbreviated versions of the initial central office and provider modules as well as the first two "special purpose data bases" to be utilized for transaction and analytical processing. [See Chapters 6 & 12.]
6. Definition of the hardware platform and network topology to be used for model testing as well as for the full Department wide production system. [Chapter 9.]
7. Analysis and definition of the interface requirements necessary to link CIMOR to the SAM II and other systems (including electronic data interchange requirements). [Chapter 8.]
8. Analysis and definition of mapping (conversion) requirements for porting DMH

- legacy system data into CIMOR, including scale / cost of the conversion process. [Chapter 10.]
9. Configuration/development of Central Office modules including a financial clearinghouse and special purpose databases to support datamart/data warehouse functionality [Chapter 6]
 10. Data requirements and technical specifications for additional special purpose databases to add to datamart/data warehouse functionality [Chapter 6]
 11. Configuration of provider modules (common and variable content) for the operational sub-systems for each of the Department's operational units. [Chapter 6.]
 12. Configuration/development and deployment of browser supported views and input into selected modules of CIMOR [Chapter 6].
 13. Installation and testing of CIMOR in a phased rollout at selected department facilities / operational units. [Chapter 12.]
 14. Deployment of CIMOR across all Department's facilities / operational units. [Chapter 12.]
 15. Provide Train the Trainer program to ensure all DMH providers and supporting personnel are trained in the use of the CIMOR system. [Chapter 13.]
 16. Provide on-going support and maintenance for CIMOR. [Chapter 15.]

B. Project Operations

1. Management

The management of CIMOR implementation is comprised of three major activities: Oversight, Project Management and Performance Management

Oversight is provided by the Department of Mental Health (DMH) Executive Team, which, in turn, has delegated authority and responsibility for the project to Gary Lyndaker, DMH CIO and Deputy Director for Information Systems. He directs the activities of all DMH personnel involved with the project and chairs the Implementation Team.

The DMH Project Manager, Rhonda Haake, has been assigned responsibility for coordinating all activities related to the project, including facilitating the Implementation Team meetings, coordinating communications and organization of project tasks and assignments.

The CIMOR Implementation Team (Implementation Team) oversees project policy and process and ensures representation of DMH Divisions and providers requirements in the development and implementation of CIMOR. The Team's responsibility is to make decisions that reflect a Department-wide perspective. They are also responsible for identifying policy issues that need to be brought to the DMH Executive Team for decision. The full Implementation Team meets formally a minimum of one

time per month, and at the outset of the project is expected to meet for at least two days per week. A written record of discussions and decisions is maintained for all Implementation Team meetings.

iServ Systems representatives will attend these meetings either in person or via scheduled conference calls. The DMH members of this team will meet at least two days per week to review tasks that are the responsibility of DMH as necessary to assure the project continues to progress.

The members of the Implementation Team and their responsibilities are summarized in Table 1 below:

Table 1: Implementation Team

Name and Role	Description of Responsibility
Rhonda Haake, DMH Project Manager	Single point of contact throughout duration of CIMOR project. Coordinates access to required information, activity of work groups and coordination with Department management
Gary Lyndaker, DMH CIO and Deputy Director for Information Systems	Responsible for working with iServ Systems to develop an understanding of the application generally and the DMH Delivery Model specifically. Chairperson of the Implementation Team.
Greg Riley, DMH Director's Office, Administration and ADA Representative	Represents the assigned Division and makes final decisions for it related to implementation of CIMOR. Decisions are to be departmental. Identify policy issues that need to be taken to the DMH Executive Team.
Benton Goon, CPS Representative	Represents the CPS Division and makes final decisions for it related to implementation of CIMOR. Decisions are to be departmental. Identify policy issues that need to be taken to the DMH Executive Team.
Gary Schanzmeyer, MRDD Representative	Represents the MRDD Division and makes final decisions for it related to implementation of CIMOR. Decisions are to be departmental. Identify policy issues that need to be taken to the DMH Executive Team.
Ron Fessenden, MD, MPH iServ Project Director	Senior representative for iServ Systems for the duration of the CIMOR project. Single point of contact for DMH personnel. Senior management responsibility for iServ activities related to CIMOR contract.
Rick Lieberman, PhD iServ Implementation Manager	Manage all internal iServ Systems activities related to CIMOR deliverables. Coordinate contractor, subcontractor and DMH activities related to configuration, development and deployment.
R. Blake Chaffee, PhD iServ Quality Control Manager	Represent iServ Systems on the Oversight Committee with regards to Project quality assurance.

Project Management is a shared responsibility between the DMH Project Manager and iServ Systems. iServ Systems is the primary contractor for the CIMOR project and is responsible for managing the design, development, configuration and deployment of deliverables as described in this Implementation Plan. Ron Fessenden, MD, Vice-President of iServ Systems is the full time Project Director. He is also the liaison between iServ Systems and DMH. Rick Lieberman, Ph.D. serves as iServ's Implementation Manager. Working under the direction of Dr. Fessenden, Dr. Lieberman manages all CIMOR related activities of iServ Systems personnel and personnel working on the project who are supplied by any and all sub-contractors. Both Dr. Fessenden and Dr. Lieberman will be on-site in Missouri on an as-needed

basis, and generally at least one time per month. In addition, iServ Systems will establish an on-site project office in Jefferson City.

Performance Management is provided by an Oversight Committee appointed by the Implementation Team. The Oversight Committee functions as described in Chapter 4.2.14.1 of the RFP. Per the RFP its purposes are to “(1) Measure and assure the performance of the contractor... (2) Support and guide the continuous improvement and innovation of the contractor’s product/service processes and organizational performance; and (3) Actively manage the customer/supplier relationship between DMH and the contractor.” The oversight committee will develop a written plan for performance measurement based upon the deliverables and timeline included in this Implementation Plan. It will specifically address project:

- Timeframes
- Key services and processes
- Definition of expectations and requirements (including input from end-users)
- Performance indicators, measurement, reporting and review
- Action planning
- Improvement activities and continuing evaluation

Per the RFP, the Oversight Committee is comprised of Gary Lyndaker, DMH CIO and the DMH IT Advisory Group made up of representatives of a cross-section of the Department’s key programs, facilities and central office. The Office of Information Technology (OIT) is expected to participate on the committee. Ron Fessenden, Project Director and Rick Lieberman, Implementation Manager represent iServ Systems. R. Blake Chaffee, Ph.D. serves as iServ System’s representative for quality assurance. He maintains all QA monitoring and documentation materials. These will be summarized and reported to the Oversight Committee on a monthly basis.

All project management personnel and all project management activities are guided by the contents of this Implementation Plan, as approved by DMH, and as may be amended from time to time by the Implementation Team. A continuously updated summary of project activities, deliverables and schedules is maintained by iServ Systems, reviewed by the Implementation Team and fully accessible to DMH personnel responsible for facilitating and coordinating project activities. All other management-related communications and documentation is managed per the Communication Plan described in Chapter 2.

2. Deliverables and Implementation Activities

All CIMOR activities are directed at the timely completion of a series of project deliverables.

These are organized into four major groupings: Missouri Deliverables 1, 2, 3 and 4 (MOdel.1 – MOdel.4), respectively. Each item within the groupings is derived from the functional requirements listed in the

RFP. iServ Systems and DMH have clarified the requirements through discussions and analysis in preparation for the creation of the Implementation Plan.

The majority of CIMOR deliverables can be described as “modules”. Modules are the physical embodiment of project requirements in software or databases specifically designed to support CIMOR functionality. Other deliverables include a logical and physical model (prototype) of the major components of CIMOR, a set of data and transaction standards, and a set of requirements and design specifications for Special Purpose Databases to be added to CIMOR after the deliverables described below are deployed. The modules are described below and summarized in Appendix 1: Summary of Deliverables & Activities. Additional details are available in Chapter 6, Technical Design.

MOdel.1 - Logical and Physical Models (Prototype)

MOdel.1 is a working demonstration of several of the major components of CIMOR. It will be used to verify the functionality of its key features before an effort is undertaken to complete the configuration/development of the full-scale system.

MOdel.1 includes a *logical model* of the entire system that describes all of the components of CIMOR and how they relate to each other (See Chapter 6 for details). It also includes a *physical model* wherein a means to support enrollment and service reporting activities at the point of service will be constructed, as well as a prototype for several Central Office modules. The latter include the Financial Clearinghouse, the first version of the Master Client Profile (MCP.1), and the first version of a Delivered Services Data Base (DS.1). Taken together these three modules will demonstrate the following CIMOR functions:

The *Financial Clearinghouse* receives service entry data and supports processing it into claims or other reports to payers. The data in the Financial Clearinghouse will also support the management of funds related to allocations.

The *Master Client Profile* is a special purpose database that will serve as a point of aggregation of certain key data pertaining to each person served by DMH. This is an example of an On Line Transaction Processing (OLTP) database designed to provide summary information that is useful to individual providers rendering services to specific clients. Maintained centrally, it will support such activities as enrollment, crisis intervention, client movement across programs and the like. It (or a database closely related to it) will also track and summarize information related to incidents and injuries. As an OLTP database it will serve as a prototype for other transactional databases that may be developed.

The *Delivered Services Database* will aggregate information pertaining to all services provided to all DMH clients. It is part of the response to a need for data warehouse functionality, and is an example of an On Line Analytic Processing (OLAP) database. Such databases provide access, analysis and reporting on

extracted/aggregated data. Fully deployed, this particular one will be an important tool for such activities as quality management, regulatory compliance, trend analysis and internal management reporting. This will also serve as a prototype for other OLAP databases to be developed as part of CIMOR at a later time.

Model.2 - Data Standards and Central Office Modules

Data and Transaction Standards

The success of CIMOR is founded on the adoption of *Data and Transaction Standards* as described in detail in Chapter 3, Definition of Standards. Developed by a workgroup made up of iServ personnel and representatives of DMH facility and contractor types, the standards will be used to inform the construction of each and every central office and provider module. All modules are built from the same base universe of data elements. When it is deemed necessary to represent particular additional data needs of any of the Division or facility types, a uniform set of standards will be created as an adjunct to the basic set.

The process of identifying the data standards will be guided by four principles:

1. Keep the data set as small as possible. Incorporate elements only to the extent they are required by regulatory and payer agencies, actually meet the information needs of the service providers, or meet actual management requirements of the Department.
2. Incorporate any existing (or foreseeable) external standards that apply to behavioral health, e.g. HIPAA (Decision Support 2000), JCAHO etc. (HIPAA standards would be required of DMH and its contract providers even in the event that CIMOR was not implemented.)
3. If external standards do not address all DMH needs, add Department-described data elements that reflect requirements that apply to common activities across divisions and programs, e.g. for the purpose of enrolling new clients.
4. Finally, add other elements only if they represent real differences among client types, programs, facilities or Divisions.

In addition to the data standards themselves, a workgroup will also identify transaction standards. Using the same principles as above, it will specify exactly how the data will be recorded and then transmitted between CIMOR's various modules. The transaction standards will apply not only to the CIMOR system itself, but also to external systems such as those found at contract providers that feed CIMOR and receive data from it. This means contract providers will be able to retain their own information systems if they choose. However, in so far as they enroll, authorize, bill or report on services

to DMH clients, they will have to conform those systems to the data elements and transaction standards that will drive the development of CIMOR itself.

Central Office Modules

All module configuration, development and deployment in MModel.2 will be directed at supporting Central Office role_functions related to enrollment, billing and claiming.

The principal module in MModel.2 is the completed version of the Financial Clearinghouse. This is designed to replace the current Purchase of Services (POS), Community Placement System (CPP), and Reimbursement Systems. It will receive enrollment and service information (billing) from the provider side of DMH operations and process it into claims to payers. Some of the same information will be used for reporting and analysis related to managing allocated funds.

As described in more detail in Chapter 12, the present plan is to initially deploy CIMOR modules in a manner that leaves the current DMH system intact and running in parallel to the modules that will eventually replace it. This requires that the current means to collect enrollment and service information at the point of service (in MRDD/IS, CTRAC, POS, and CPP) must be maintained and some subset of that data needs to be sent to the Clearinghouse. Thus, the second deliverable in MModel.2 are "shims" to support this process. During MModel.3 modules will be deployed at the point of service to enable providers to accomplish direct and unduplicated input into CIMOR. These will replace the shims deployed in MModel.2. For additional information on shims, see Chapter 6, Technical Design; Chapter 8, Interface Requirements; and Chapter 12, Deployment and Installation.

Finally, a second, more robust version of the Master Client Profile (MCP.2) will be delivered in MModel.2. This will include data that is extracted from the Clearinghouse as well as enrollment data still residing in legacy systems (extracted via shims). This version of the MCP will be browser enabled so that any facility-based or contracted provider with a personal computer (PC) and the proper security clearances will be able to read [only] summary information on individual clients via the internet.

MModel.3

As the initial deployment of MModel.2 gets underway, a third set of modules will be designed and configured/developed for delivery as MModel.3. These are designated as *Tier 1 Provider Modules*. As distinguished from Central Office Modules, these are designed to support point of service and back office role_functions at DMH facilities (the "providers"). The data they capture and manage relate to role_functions common to every DMH facility type, serving every sort of DMH client. A contract provider could also use these modules as part or full replacements for their local information systems if they chose. Certain of the modules, such as for enrollment and billing, will be browser enabled and could

also be used as standalone support for smaller providers who have PCs but who do not maintain full information systems *per se*.

Tier 1 provider modules can be further differentiated into two sub-classes. The first sub-class contains *Common Content Modules* that have exactly the same data elements across facility or client types. The second sub-class contains *Variable Content Modules*. Like the Common Content Modules, Variable Content Modules are designed to support role_functions and workflow that occur at the point of service throughout DMH. However, although the format and general content may be common across all workflows, the data within each module may actually vary according to such things as the needs of the client, the location of the services, or the requirements of the payer. These “distinctions that make a difference” are what you would expect to find, for example, between children and adults (school status, marital status etc.) or between persons requiring habilitation services from an MRDD facility and those requiring prevention services from an ADA program.

Common Content Modules include:

- An enrollment module to capture all data related to enrollment of all clients. This is intended to replace a subset of CIMS and CTRAC related to demographic, funding and other administrative information. When this is fully implemented CIMS and CTRAC will no longer be used for enrollment.
- A clinical intake module to capture summary data on diagnosis, impairments, assets and needs such as would be collected in a clinical intake.
- Service entry module to facilitate real time capture of information that is used to create bills to be forwarded to the financial clearinghouse.

Variable Content Modules include:

- Scheduling to facilitate management of provider time, client appointments and activities and other service resources. The scheduler can also be configured to support billing.
- Assessments to capture information that summarizes the results of various assessment processes that are undertaken to determine client service requirements (e.g. psychiatric, nursing, psychological assessments etc.)
- Treatment/Habilitation Plans that summarize goals, objectives and services to be provided to clients.
- Discharge/ Aftercare Plans that summarize services, providers etc. that will support client return to communities or activities following discharge from a particular level of care or kind of service.
- Pharmaceutical Management to support prescribing and medication management as well as reporting on the use of medications

- Standardized reports that are used to meet routine regulatory or internal management requirements.

As with MOdel.2, the actual data standards for both types of core provider modules will be developed by DMH workgroups. They will employ the same general approach as described earlier.

MOdel.4

The final set of deliverables contains both central office and provider modules. In both instances these will be designed to add to the functionality provided by the modules or databases configured/developed earlier in the CIMOR implementation process. A decision about which ones and when to configure or develop them will be made as the system impact of MOdel.2 and 3 is understood. In general, if these are actually constructed, they will be deployed later in the implementation than those described above.

Central Office modules in MOdel.4 will include special purpose databases to add to the functionality of the data warehouse. These will be designed to be managed centrally and accessible to the central office and the providers as well. While their exact nature has not yet been identified, such databases might be used to help reduce the effort that many DMH facilities make to respond to the myriad of external audits to which they are subject (e.g. JCAHO, Division of Aging, HCFA etc.). Similar databases may be developed to help consolidate local and Department-wide efforts in quality management and continuous quality improvement. These could include such activities as evaluation and reporting of client satisfaction and outcomes measurement, for example. The extent to which additional databases will be delivered, or whether the deliverable is limited to analysis and design is to be determined through the functional analysis process described in Chapter 5 and the PAQ process described in the RFP.

Tier 2 Provider Modules remain to be determined as the functional analysis described in Chapter 5 is completed. The RFP and preliminary discussion suggests that these may include support for *Pharmacy*, and *Lab* role_functions, *progress notes*, *case management activities* and *other communications* between providers. In addition there is strong support for an application to support *Dietetic Management* activities. Requirements for Dietetic Management are extensively documented in the CIMOR RFP.

Functional analysis and development of requirements for MOdel.4 will begin in MOdel.3. A determination of suitable development/configuration targets and deliverables will be completed at the beginning of MOdel.4. A final decision to incorporate any of these into CIMOR will be based on the extent to which automated support is expected to improve role_function effectiveness or client outcome. The cost to achieve such improvements will also be a central consideration. DMH will determine when and how modules will actually be deployed during MOdel.4. After functional analysis is complete it is also possible that one or more of these modules will be deployed as part of MOdel.3. Alternatively, deployment may be scheduled after CIMOR becomes fully operational.

Implementation Activities

Activities related to the configuration/development and deployment of the deliverables described above are summarized below and referenced in Appendix 1: Summary of Deliverables & Activities. They are described in greater detail in the remainder of the Implementation Plan. A schedule for their completion is outlined in Chapter 12, Installation and Deployment.

The configuration/development and deployment of each of the deliverables will proceed through a reiterative set of activities to be performed either by iServ Systems, DMH or both together.

In general, iServ System will take the lead in activities related to:

1. Role_function and workflow analysis
2. Development of user requirements
3. Configuration/development specifications and design
4. Application or database configuration/development
5. Internal testing
6. Training (of trainers)
7. Module deployment
8. Activities 1-7 also include participation in project management, communications and quality assurance

In general, DMH will take the lead in activities related to:

1. Project oversight
2. Communications support
3. Workgroup organization & management
4. Platform & network design and deployment
5. System administration
6. Quality assurance

Configuration/development activities (including iServ System 1- 4 and DMH 1-4) will be guided by the following principles:

1. M0del.1 will be delivered and accepted before proceeding to M0del.2
2. Data standards will be determined in detail before proceeding with M0del.2
3. In general, configuration/development activities related to each M0del will proceed in the order in which modules will be delivered. However, assuming sufficient resources to operate functional workgroups, analysis, requirements and specifications activities may proceed on M0del.2 and M0del.3 concurrently.
4. Activities related to M0del.4 will not begin until deliverables are determined and only after M0del.3 activities for specifying variable content modules are complete.

Deployment activities will be guided by the following principles:

1. The order of deployment will generally parallel the configuration/development of deliverables as outlined in the description of each MModel. That is, deployment of MModel.2 will precede deployment of any of the modules in MModel.3 etc.
2. No single deliverable or MModel will be deployed across the Department all at once.
 - a. Each will be tested and accepted in a model office with pre-loaded data first.
 - b. It will then go-live at a single pilot site.
3. After a MModel is successfully deployed as a pilot, it will be deployed to other sites.
4. Piloting and deployment will proceed systematically by type of facility. Although the order of deployment remains to be determined, the “types” of facilities include:
 - a. Habilitation Centers
 - b. Regional Centers
 - c. Long Term Psychiatric Facilities
 - d. Acute Psychiatric Facilities
 - e. Outpatient Enrolling Providers
5. Deployment after the pilot will proceed first to facilities of a type similar to the pilot.
6. Subsequent deployment will proceed “vertically” in layers; that is, by groups of facilities of similar type. For example, if the first deployment begins with Habilitation Centers, the next layer might be to all Long Term Psychiatric Facilities.
7. After MModel.2 is deployed in this way, deployment of MModel.3 will begin, following a similar pattern.
8. After MModel.3 is fully deployed, then deployment of MModel.4 will begin.

As reflected in Chapter 12, we anticipate that deployment after a pilot of each MModel will accelerate as we deploy through the first several locations representative of the respective facility types. In like manner, deployment will accelerate as we move from one facility type to another.

Table 2, below summarizes the deployment process in terms of project milestones and the dates currently associated with them. A more detailed schedule and discussion of deployment is found in Chapter 12.

Table 2: Major Project Milestones / Target Dates

Project Milestone / Deliverable	Target Dates
Project Implementation Plan	March 1, 2001
Presentation of Implementation Plan to DMH Executive Team	March 2, 2001
Presentation of Implementation Plan to Missouri Mental Health Commissioners	March 8, 2001
M0del.1 Logical Model & Physical Model (Prototype)	
Delivered	May 1, 2001
Acceptance and Sign Off	May 15, 2001
M0del.2 Central Office Modules & Shims	
Pilot Begins	October 1, 2001
Deployment Complete	July 1, 2002
M0del.3 Core Provider Modules	
Pilot Begins	March 1, 2002
Deployment Complete	December 31, 2002
M0del.4 Supplemental Modules	
Pilots Begin	September 2, 2002
Deployment Complete	TBD

3. Testing and Acceptance Process

The Testing and Acceptance Process for the CIMOR Project will involve three separate, yet coordinated testing processes: the iServ Systems internal pre-release testing protocols; the DMH OIS internal pre-distribution testing routines; and the post-installation testing routines conducted at pilot facility sites. All testing protocols and routines will generally follow the process as detailed in Appendix 2: User Acceptance and Test Plan. iServ Systems internal testing follows a rigorous test process that begins at the data and field name level checking for format, content and functionality conformity to written requirements and technical specification document. All build and module releases require the signature of the Development Staff and/or the Configuration Specialist responsible for the build or release AND one additional Quality Assurance Tester (Appendix 2 also gives examples of types of detailed checklists and Test Scripts used in the test and release process.)

All releases will be subject to a sign-off process certifying that the product release conforms to customer specifications / requirements where applicable unless otherwise stated. The certification will contain a description of the build/release; installation instructions; release notes specifying the module/process affected by the build; documentation relating to the build/release; and signatures of the Project Manager, the Configuration Specialist who was involved in the build or release, and one additional person who was involved in the QA testing process (see Appendix 2 for an example of the “iServ Systems Product Release Certification”).

4. Performance Management & QA

The CIMOR Project involves the design, development and implementation of a replacement information

system for 28 Department of Mental Health (DMH) facilities statewide, including the Central Office and administrative support systems. Given this scope, the success of the CIMOR Project depends on the performance of both the iServ Systems and DMH personnel involved. In most cases, the successful design, development and implementation of contract deliverables will be achieved with iServ Systems and DMH personnel completing tasks together; in other cases, their tasks are interdependent, and only rarely will either have sole responsibility for any deliverable start-to-finish. The performance management and quality assurance plans for the project, therefore, reflect this “team” approach and encompass the performance of both contractor and DMH personnel.

An Oversight Committee will develop a written plan for performance measurement as described in the RFP, Chapter 4.2.14.3. An initial draft of the performance management plan will be completed within six months following the contract award date, as required by the RFP.

The plan will specifically address project:

- Timeframes
- Key services and processes
- Definition of expectations and requirements (including input from end-users)
- Performance indicators, measurement, reporting and review
- Action planning
- Improvement activities and continuing evaluation

The performance management plan will be based on the deliverables and activities specified in the Chapter 1.3.1 and Chapter 12 of this Implementation Plan. For each of the contract deliverables, the Oversight Committee will consider the activities required of iServ Systems and DMH to successfully develop and implement that deliverable. For example, for the Enrollment deliverable of the Physical Model, the following activities will be considered:

- Contractor Activities
 - Specification
 - Construction
 - Testing
 - Demonstration
 - Project management
 - Communications
 - Quality Assurance
- DMH Activities
 - Project oversight
 - Communications support

- Workgroup organization
 - Requirements
 - Design review
- Interface requirements
- Platform design
- Network design
- Quality assurance

Key activities will be identified and defined for each deliverable, and among these certain items will be designated as key milestones of completion. Timeframes for completion of these milestones will be determined. The Oversight Committee will develop measures and mechanisms for tracking their completion. The results will be reported to the Oversight Committee at regular intervals throughout the implementation. iServ Systems and DMH personnel involved in the CIMOR project will provide performance data to the Oversight Committee's Quality Assurance Manager who will summarize these data and provide reports monthly, or as otherwise required by the committee.

Across deliverables, common measures defined for tracking completion of activities will be aggregated into key performance indicators. Key performance indicators will include, but not be limited to:

- Reliability of contractor developed schedules
- Completion of key milestones
- Product functionality
- Time to resolution for identified problems
- Staff professionalism
- Training effectiveness
- End-User satisfaction

Once sufficient baseline information has been collected for each of the key performance indicators defined by the performance management plan, the Oversight Committee will establish threshold levels of performance on each indicator. Wherever key performance indicators do not meet or exceed the threshold levels of performance, the Oversight Committee will establish goals and timelines for performance improvement and will set priorities among the areas requiring performance improvement. These will be areas requiring immediate attention and/or action by the CIMOR project personnel responsible for those areas. The Oversight Committee may set specific performance thresholds and schedules for attainment of those thresholds.

For its part, iServ Systems has its own internal methods for continuous quality improvement that it will use to assure that its product and service performance will meet expectations throughout the life of the contract. For example, it utilizes Quality Assurance Checklists as part of this process. These checklists

contain a series of questions concerning the quality of the work being performed. They are prepared by the project team members responsible for the work and are jointly reviewed by the Implementation Manager and the Quality Assurance Manager. Used in this way, these Quality Assurance Checklists serve not only as “memory aids,” enhancing the quality of the work completed, but also as an efficient reporting mechanism that documents completion of a quality product. The Oversight Committee will use these to support the evaluation and monitoring of iServ Systems’ performance. The development, revision and management of these mechanisms and the publication of their associated reports will be provided at no additional cost to the Department.

The Oversight Committee will conduct an annual assessment of its approaches and their success in fulfilling the requirements of the RFP and the expectations and requirements of end users. Meetings of the Oversight Committee will be at least monthly or as otherwise determined by the committee to fulfill its responsibilities. The Oversight Committee will use an agenda that will include, but not be limited to, the following core items for review and action at every meeting.

1. Initial implementation plan
 - a. Key milestones
 - b. 30-day completed activities
 - c. 30-day outlook
2. Product functionality
 - a. RFP compliance
 - b. Modification schedule
 - c. Results of performance testing of modifications
3. Update and review of outstanding requests/issues
4. Review of performance plan
 - a. Status of plan development/update
 - b. Review of performance indicators
 - c. Corrective actions
 - d. Review of customer incident reports

This agenda may be revised as appropriate for the Oversight Committee to fulfill its responsibilities.

5. Change Request Process

The CIMOR Implementation Team will be responsible for any revisions and/or refinements to scope and contract requirements or provisions, considering only such changes that provide a clear and compelling benefit to the Department. Modification or deviation from the deliverables as described in the contract documents and/or as outlined in this Implementation Plan will be subject to a formal scope control and change request procedure.

Either iServ Systems or DMH may initiate a request for change whenever there is a perceived need for a change that will affect the overall costs, timeline or functionality of the project. Change requests will be submitted using a standard scope control document called the Request for Change or Inquiry (RCI) form [see Appendix 3: Request for Change or Inquiry Form]. This form will be used to request scope changes in the project as well as to define and record issues identified throughout the implementation process. Change requests will be forwarded to the Implementation Team for action. If necessary, the PAQ process delineated in the RFP will be used to determine the need for and extent of changes. A log of change requests will also be reviewed at Oversight Committee meetings and will be included with the monthly project performance management reports [see Appendix 4: Change Request Log]

Significant changes to scope or contract will fall into two categories, subject to separate but related processes. These include:

A. Contract Amendments

The Implementation Team will utilize the following process to evaluate whether requested changes require contract amendments:

1. Identify the issue
2. Describe the issue in terms of functional requirements
3. Describe the data set needed to support the issue
4. Describe the scope of effort needed to meet the issue's requirements
5. Decide if addressing the issue is reasonable under the contract.
6. If the resolution of the issues is considered outside the contract, consider if the contemplated activity must be completed for CIMOR to proceed.
7. If it is required, determine who will address it (e.g. DMH, iServ Systems, a third party).
8. If iServ Systems is the party to address the issue and it may affect the overall pricing of the contract it will be subject to the PAQ process as summarized below and detailed in the RFP.
9. If it has no fiscal impact it will be summarized in either a PAQ or a memorandum, reviewed by legal representatives for DMH and iServ Systems, and formally signed-off by each party.

B. Project Assessment Quotations (PAQ)

All contract amendments that may have monetary impact will be reviewed using the PAQ process. (See Appendix 5 for a sample form.) The process will also apply for proposed implementation services, consulting services, and project management services projects with total duration of more than 40 hours and less than \$25,000.

The PAQ process will be used to:

1. Identify the specific tasks to be performed, and,
2. Mutually agree upon the total price to be paid to the iServ Systems upon completion of the specified tasks.

As described in the RFP, the PAQ process will occur in a controlled sequence of proposals and approvals by Gary Lyndaker, DMH CIO, and iServ systems' Project Director, Ron Fessenden, M.D. On projects with a total duration of 40 hours or less, DMH may also, but is not required to, utilize the PAQ process.

CIMOR Project PAQs will conform to all other applicable RFP requirements.

6. Policy-Making and Problem Resolution

The CIMOR Implementation Team is responsible for policy-making and problem resolution for the CIMOR Project. The Implementation Team may identify issues that require policy decisions that were either unforeseen implications of the RFP or new issues that may arise as the result of implementation activity or external events that affect the CIMOR Project. Problems may emerge in a similar manner. In either case, the Implementation Team will follow a systematic process to identify, define and resolve issues and problems with appropriate decision-making.

The Implementation Team will employ a standard spreadsheet tool to document and guide their discussions of policy issues and project problems. Each policy issue or problem will be identified, implications for the CIMOR Project will be defined, appropriate timelines for decision-making or resolution will be established, and each issue or problem will be assigned to appropriate Implementation Team members for necessary external consultation or fact-finding. Notes of Implementation Team discussions will be entered to document progress and final policy decisions or problem solutions noted. This process will provide both a working document and historical record of project policy and problem resolution that will inform consideration of future problems and issues relevant to the CIMOR Project.

If a policy issue requires resolution that will affect the project Scope, it will be subject to the processes outlined in Chapter 1.5, above

C. Funding / Budget / Appropriations

The Department is committed to providing funding for the purchase of software licensing and for implementation of the CIMOR project. There are four components in determining the funding needed and obtaining the necessary funding.

1. Gain appropriation for software lease / purchase.
2. Estimate implementation costs.
3. Determine funds that can be re-directed within DMH.

4. Gain appropriation for the remaining needs.

DMH successfully obtained decision item funding of \$4.7 million for FY 2000. This funding was re-appropriated for FY 2001 and we expect the balance of this appropriation to be re-appropriated for FY 2002. These funds are for the lease / purchase of the CIMOR software and other software, modification, installation, implementation services, Training and maintenance. Table 3 below details the projected budget expenditures for base software, installation, training, and maintenance for FY01 and FY02.

Table 3: CIMOR Projected Expenditures for base software, installation, training, and maintenance for FY01 and FY02

		Base Sfw*	Install	Train	Maint**	Total
Planned		3,000,000	120,000	630,000	500,000	4,250,000
FY01						
	Prepare Implementation Plan	270,000				270,000
	Implementation Plan Approved	330,000				330,000
	MOdel 1 Accepted	400,000				400,000
	FY01 Totals	1,000,000	0	0	0	1,000,000
FY02						
	MOdel 2 Delivered	300,000				300,000
	MOdel 2 Training Complete			210,000		210,000
	MOdel 2 Pilot Accepted	200,000				200,000
	MOdel 2 Installed Statewide		40,000			40,000
	MOdel 2 Accepted Statewide	200,000				200,000
						0
	MOdel 3 Delivered	300,000				300,000
	MOdel 3 Training Complete			210,000		210,000
	MOdel 3 Pilot Accepted	200,000				200,000
	MOdel 3 Installed Statewide		40,000			40,000
	MOdel 3 Accepted Statewide	200,000				200,000
						0
	MOdel 4 Delivered	300,000				300,000
	MOdel 4 Training Complete			210,000		210,000
	MOdel 4 Pilot Accepted	100,000				100,000
	MOdel 4 Installed Statewide		40,000			40,000
	MOdel 4 Accepted Statewide	200,000				200,000
						0
	Maintenance (assume 20 mo)				500,000	500,000
	FY02 Total	2,000,000	120,000	630,000	500,000	3,250,000
Scheduled		3,000,000	120,000	630,000	500,000	4,250,000

Assumes Pharmacy and Dietary are included. If not, reductions made based on contract.

** Maintenance @ \$25K/mo starting at MOdel 2 Accepted Statewide

Estimates of the total cost of the CIMOR implementation statewide have been made and refined over the past year. These estimates include all costs for hardware, infrastructure/network, and communications software and servers required for the project. Full technical specifications for hardware and infrastructure will be required (See Chapter 9: Hardware and Infrastructure) in order to present final budget figures. Table 4 below summarizes the current estimate of Expense and Equipment (E & E) dollars needed for all DMH IT efforts from FY2001 through FY2003 and on going in order to assure the successful implementation of CIMOR.

Table 4: Project Expense and Equipment Budget

Total DMH IT Equipment & Services Costs*				
IT Equipment & Service	FY01	FY02	FY03	On-going
CIMOR Software Licenses - Total	1.0	2.5	0.0	0.3
Contract Implementation Services	0.2	1.1	1.0	0.0
Network - Total	1.8	2.2	1.6	2.1
Department-wide Email	0.1	0.3	0.1	0.1
Current Mainframe/Server Computers	1.4	1.6	1.7	1.1
Other Facility Needs	1.0	1.0	1.0	0.7
New Server Computers	0.1	2.7	2.7	1.0
DMH PC's - Hdw/Sfw (6000@\$1750)	2.2	4.0	4.3	3.5
Total E&E Needs	7.8	15.4	12.4	8.8
Subtract FY00 Appropriation	1.5	3.2	0.0	0.0
Subtract Current DMH IT Budget**	6.3	6.3	6.3	6.3
Total Additional E&E Needed	0.0	5.9	6.1	2.5

* Costs in millions of dollars to support all DMH IT functions, including CIMOR

FY02 & 03 requests are one-time

** OIS E&E budget = \$2.8M/yr.

Facility IT Spending = \$2.3M/yr.

CO IT Spending = \$1.2M/yr.

The first two lines of the table are costs that are a direct cost of the CIMOR project. The New Computers and Network costs are partially driven by this project. Continued purchases and replacement of workstation PCs must go forward regardless of the CIMOR project. New Servers and more PCs will be required by CIMOR. SAM II and increased email, Internet, and intranet usage, have driven demands for increased network capacity. CIMOR will drive the need for even greater capacity and increased reliability and security.

It should be noted that \$16.0 million of the three year implementation cost is associated with the cost of new computers. Current estimated cost for server computers, including system software, is \$5.5 M. This estimate was derived assuming two large central computer systems at \$1M each and 70 other servers at \$50,000 each. These assumptions will be reviewed by the CIMOR technical workgroup to be chartered in late March 2001. . Improved price/performance of standard hardware may help control these costs.

PC purchases and replacements account for \$10.5 M in the total three-year cost. There may be opportunity for cost reductions in the PC area. The estimate above is based on a three-year replacement cycle and a \$ 1750 price per PC (including basic OS and Office software) for a projected 6000 users. (Currently about 1500 of 6000 system users have PCs capable of running the proposed system.) The industry trend toward lower hardware costs may combine with a possible longer PC lifecycle to decrease the annual cost of this line item by as much as 40%.

The assumption is being made that over one-half of current facility and division information technology spending will be targeted to support this project while maintaining current operations. This will be a challenge to facility IT staff, as it will require maintaining current systems without new investment in AS/400 systems. We also assume that current OIS E&E appropriation of \$6.3 M per year will be applied to the costs identified above.

Based on the estimates above, the Department has proposed a \$5.9 M decision item for FY 2002. That item is currently in the Governor's Budget Recommendation for funding and has been presented to the appropriate house budget committee.

If the Department does not receive this appropriation, it will be unlikely that we can implement any of the CIMOR system. If we receive partial funding, it would be necessary to perform a new risk analysis and present this to the Department's Executive Team. The DMH Executive Team would need to determine whether, and how, to proceed with implementation of any part of CIMOR. An important part of the decision making context here includes the fact that HIPAA requirements would still force significant modification to current systems and incurring significant costs in the event CIMOR would not proceed.

The services described in this proposal and the pricing contained within this document are subject to the terms and conditions of the State of Missouri Contract No. C002024001 and all applicable contract amendments or other written agreements executed between DMH and iServ systems.

Additional professional services outside the defined scope will be subject to the PAQ process described in Chapter 1.B.5.b above and in the original contract documents.

D. Assumptions

The following assumptions have been made in developing this Implementation Plan. Changes in assumptions may have a material impact on the project scope, timeline and project structure. Although aggressive, we believe that the timetable summarized in Chapter 1.2, above and detailed in Chapter 12 is achievable given the combination of full-time resources committed to the project by DMH and iServ Systems:

1. General
 - This project will be managed to the scope of identified deliverables in this document. Any scope changes identified during the course of the project must have Scope Change documentation and be approved by the DMH Implementation Team and iServ Systems project management. Scope changes that impact the contract will be addressed by Gary Lyndaker and Ron Fessenden.

- Project Issues will be resolved in a timely manner (e.g., standard issues -- 24 hours by Implementation Team members/individual managers; complex issues -- 1 week by Implementation Team and/or DMH Executive Team) by team members and/or the DMH Executive Team. Immediate escalation will occur if issues prevent the progress of the project.
 - Each deliverable will require formal acceptance and sign-off to indicate the completion of the deliverable. Project completion may be determined when all deliverables in the proposal are signed off and accepted by DMH.
 - Delays in receiving timely reviews and approvals of all deliverables, whether due to availability of DMH or iServ Systems team members, could result in project delay and additional costs. Each deliverable should have a reasonable turnaround for comments and acceptance (2 business days).
 - DMH will be responsible for maintenance of all third-party relationships outside the scope of its contract with iServ Systems, including but not limited to temporary help agencies for manual conversion, outsourcing vendors, third-party administrators, hardware vendors, and other software vendors.
2. Business Process Improvements
- Process Improvements will be limited, and only when they can be implemented in a timely manner without jeopardizing the project schedule or project budget. DMH resources will concentrate efforts on process improvements where necessary during the implementation of CIMOR and will adopt best practices to meet system and business requirements.
 - iServ Systems will provide “business process improvement” consulting services as defined within the RFP and covered by the PAQ process when requested by DMH.
3. Project Facilities
- Configuration and development efforts for this engagement will be performed primarily at iServ Systems Seattle office location.
 - iServ Systems will set up an independent testing location to support testing activities.
 - iServ Systems will set up a local project office in Jefferson City, MO to house training and customer support activities. The establishment of this “shared training & customer support center” (TCSC) will be the responsibility of iServ Systems, including hiring and training personnel, logistics, policy and procedure development, help desk support, escalation procedures, development and issue resolution.

- DMH will provide office space and equipment within DMH central office facilities for the use of iServ Systems project team to include: PC workstation, application access, phones, faxes, modems lines, printers and secured file retention space.

4. DMH Staffing

The Department will dedicate a number of staff on a full or part-time to support and carry out the implementation effort. No significant changes will be made to the DMH staff once it is in place, unless absolutely necessary. Upon mutual agreement between DMH and iServ Systems changes to the staff can be made as circumstances arise. The following positions will be provided:

- Training manager – Coordination of all end user training activities
- Technical expert – Network
- Technical expert – Platform
- Technical expert – Legacy system programmer
- Technical expert – MRDDIS programmer
- Technical expert – Database Administration
- Technical expert – Facility data processing – large facility
- Technical expert – Facility data processing – small facility
- Health Information Management – Medical records (representatives from several different facilities).
- Reimbursements – Accounts receivable
- Accounts payable – Purchase of services
- Facility Administration (Representatives from a Regional Center, Habilitation Center, Acute Facility, Long-term psychiatric rehabilitation center and a children's facility.
- Quality Management and Decision Support
- Pharmacy
- Dietician/Dietary Services
- Clinician (psychiatric, substance abuse, developmental disabilities)
- MRDD Case Manager (service authorizations)
- Other members to be determined

5. DMH IS Infrastructure

- The iServ Systems application code and database(s) will reside on the server(s) located in DMH central office and operational facilities. The iServ database tables will reside in the existing iServ database(s) (initially FoxPro) on a separate drive on DMH server as a staging version of the application.

- DMH is responsible for maintaining the overall systems architecture, including all hardware and network resources, firewalls and security systems, at an acceptable level of performance and readiness so as to minimize disruption to the project environment. DMH is responsible for ensuring that disk space requirements of the production and test instances are met.
6. iServ System Application Security
- DMH will be responsible for defining requirements for user and application security for the iServ application in all configurations by iServ Systems for all iServ database instances.
 - DMH will be responsible for all resolving policy issues relating to accessibility and security to the central system, as well as all security for transactions and communications to the central system via the internet, intranet, or dial-up connections.

7. Data Conversion

The following principles regarding data conversion apply to the CIMOR project:

- Data conversion will be limited to minimums required for system functionality, continuity of services, and sound A/R management.
 - Data conversion will not be initiated without agreement by DMH and iServ Systems with regard to written requirements, including scale & cost of the conversion process. [See Chapter 10: Data Conversion / Migration Plan for additional details.]
8. Interfaces
- The implementation of CIMOR across DMH is designed as an incremental process over 24 months or longer. It is required that CIMOR have the ability to communicate with other systems used by the State of Missouri, in general, and the Department of Mental Health, in particular, at the time that the legacy systems will be fully replaced. [See Chapter 8: Applications Interface Requirements for additional details.]
 - Interface import/export specifications will be defined in the functional analysis process by members of DMH IT staff and iServ Systems technical team. [See Chapter 8 & Appendix 12.] Responsibility for the construction of required interfaces will be determined after the analysis and specification process is completed.
 - The process of testing and incorporation of interfaces into the CIMOR operational systems will parallel the implementation and deployment schedule of CIMOR across operational divisions.

E. Risk Analysis

There are a number of risks to the completion of the CIMOR project related to budget requirements, its impact on all the Department's operations, and the relatively short timeframe for configuration/development and deployment. In order to keep these risks and their impact at a minimum a number of project risk planning and management activities are incorporated throughout the project. Risk items are reviewed on a routine basis. This review is directed at managing risks that have already been identified, as well as identifying new potential risks.

Risk Management Methodology

During risk assessment and review meetings, risk items are assigned a rating for probability of occurrence (P) and impact (I) using a scale of .1 to .95 for each item, where .1 is low and .95 is high. An average probability is calculated by dividing the total probability points by the number of reviewers. Average impact is calculated by dividing the total impact points by the number of reviewers. Total risk exposure is then calculated by multiplying the average probability of occurrence by the average impact (P*I) for each risk item identified.

A risk assessment was conducted in October 2000, and another assessment was conducted in January 2001. In addition to identifying risk items, the Implementation Team defined mitigation strategies for the top ranked risks. Summaries of the risk items and the current risk mitigation plan are provided in Appendix 6.

Six primary mechanisms are used on an ongoing basis for managing project risks:

- Implementation team meetings
- Risk reviews
- Status reports
- Stakeholder Discussions
- State Office of Information Technology project review.
- Risk mitigation plans

Implementation Team Meetings

Risks are reviewed during Implementation Team meetings. Team members are expected to comment on anything that affects each of the top ten risk items. This discussion helps to identify any changes, assess mitigation effects, determine actions that should be taken, and uncover new risks that may be likely. During these meetings, mitigation actions that have been taken are also reported, along with discussion on the effects of the actions toward reducing or eliminating the risk.

Risk Reviews

Formal risk reviews are conducted on at least a quarterly basis to perform an assessment of the current risk items, new risk items, probability, impact, and overall risk score. Mitigation strategies are developed for the top ten risk items.

The schedule of risk assessments planned for this project is on a quarterly basis, beginning October 2000 through the end of the project.

Project Status Reports

In monthly project status reports, Risk Review is included to report on risks that have become either more or less probable or serious.

Stakeholder Discussions

The Implementation Team meets with appropriate stakeholders when necessary to discuss certain risks and the effects of actions toward reducing the risks. These discussions are most appropriate when decisions outside the team need to be made in order to help manage or eliminate the risk.

State Office of Information Technology Review

The State of Missouri Office of Information Technology (OIT) has formed a group to perform reviews of large IT projects. The department's CIMOR project information was submitted to OIT to facilitate their review and response, including the budget request details, project plan, and risk assessment. OIT provided the results of their review in November 2000, which indicated that DMH had adequately addressed risk items and mitigation strategies at that point in the project.

Risk Mitigation Plan

Risk mitigation may be handled by reducing probability of the risk, reducing impact of the risk, or both. To help communicate and track the top risks, a Top10 Risks List is developed at each risk assessment session. This list identifies risks that have moved to a higher priority and risks that have moved off the list since the last review. A mitigation plan for each highly ranked risk item on the Top-10 Risks List is documented for future action if needed. The mitigation plan developed during risk assessment in January 2001 is included in Appendix 6.

CHAPTER 2 – COMMUNICATIONS PLAN

Summary

The CIMOR project will require significant and ongoing communication throughout its implementation. The project's stakeholder groups are identified, including the:

- Mental Health Commission
- DMH Executive Team
- Consumer Groups
- Implementation Team
- Facility Implementation Team
- Provider Implementation Team
- Division Deputy Directors
- MRDD District Deputies
- ADA/CPS Regional Administrators
- Facility Directors and Superintendents
- Facility Assistant Directors of Administration
- OIS Staff
- Facility IT Directors
- State Advisory Councils
- Providers Groups

Target members of each group are listed and the project communications planned are outlined, including their methods and frequency. Both the existing and new project-specific channels of communication that will be utilized are described and discussed, including:

- Meetings
- Status Reports
- DMH Online
- Presentations
- Publications
- Document Sharing.

The ultimate success of any complex project depends on timely, accurate, and effective communication with all stakeholders impacted. Effective communication involves both the delivery of information and development of an ongoing dialogue with stakeholders. The purpose of the dialogue is to both deliver information and elicit feedback in order make implementation adjustments to assure a successful implementation.

The CIMOR project will require significant and ongoing communication throughout its implementation. Implementation team and stakeholder communications strategies are identified in the following sections to facilitate appropriate communications with all involved.

A. Stakeholders

One of the first steps of an effective communication plan is to identify all of the various stakeholders that have some interest in the final product. By virtue of this, the CIMOR Implementation Team has identified a number of groups that will require regular updates and discussions.

Those stakeholder groups, along with communication strategies with the group, are summarized in Table 5, below. The members of each group are listed in Appendix 7: Stakeholder Groups.

Table 5: Stakeholder Groups

Stakeholder Group	Monthly Status Rpt	Periodic presentation	Checkmate/ DMH Scoop	DMH Online
DMH Executive Team	X	L	MM	I
Facility Team	X		MM	I
Provider Team	X			
OIS staff		L	MM	I
Facility Groups (clinicians, etc.)		R, G, S	MM	I
Facility Superintendents/ Directors/CEO's Assistant Directors of Administration Division Regional Administrators/Deputies IT Advisory Group (ITAG)	X	S, G, L	MM	I
Facility IT Directors	X	L	MM	I
Provider Groups		R, G, B	MM	I
Advisory Councils		R, G, B	MM	I
MH Commission		L	MM	I
Consumer Group		R		

Presentations by L=Lyndaker, R=Riley, G=Goon, S=Schanzmeyer

Checkmate/DMH Scoop – Major Milestones (MM) announced

DMH Online – General project information (I) posted weekly

B. Stakeholder Communication Methods and Frequency

A variety of methods facilitate ongoing communication with all project stakeholders. These methods are described below, and summarized in Table 5 above.

Meetings

Implementation Team meetings are scheduled every Wednesday and Thursday. Face-to-face meetings between DMH and iServ Systems are held when necessary. Due to the vendor's remote location, some meetings may be conducted through teleconferencing or conference calls when appropriate.

Team meetings are organized using an agenda, with meeting recaps prepared and available following the meeting.

Status Reports

The Implementation Team prepares monthly status reports detailing accomplishments made during the previous month and identifying any critical issues or risk items that need attention. From the status report, a monthly Executive Summary report is also prepared. Both documents are forwarded to Department executive and management level groups.

DMH Online

Most project documents are made available on the Department's intranet site, which is accessible to a majority of DMH employees. News messages will be sent to all staff directing them to the intranet site for updates on the project at major milestone points.

The web site is also referenced on monthly reports and other documents where appropriate.

Presentations

Members of the Implementation Team are available to make presentations to stakeholder groups as requested, and as needed. The Team has requested a place on meeting agendas on a routine basis for certain groups, such as the Department's Executive Team, Commission meetings, divisional management meetings, and advisory groups. These and other similar forums will be used to ensure communication is occurring and to allow direct interaction with the team for issues that may be of specific interest to those groups.

Publications

Project milestones are communicated through published articles in the following DMH news sources:

Monthly CheckMate, which accompanies employee paychecks

The Scoop, which is released to communicate major announcements department-wide

Mental Health Reporter, published quarterly and mailed to all employees, stakeholders and interested parties

Shared Documents

Project documents are developed using Microsoft Word 2000 and Visio 2000. Project 2000 will be used at DMH for project tracking.

E-mail is used to forward shared documents. In addition, an intranet site has been set up to allow

discussion, information posting and document sharing among the team members (www.cimor.intranets.com).

Documents are named consistently, using the document title or subject, author, date, and version (TitleAuthorYYMMDDVersion.doc). Documentation is made available through the intranet site as much as possible.

Functional Teams

In addition to communications about project status, there is significant need for input from various workgroups throughout the Department as the project is developed and implemented. These workgroups will be organized as functional teams on an as needed basis to address specific requirements of the system. These teams will be given assignments and dates to provide their results back to the Implementation Team. For additional information on workgroups/functional teams, see Chapter 5, Functional Analysis.

The Implementation Team will select a leader/facilitator for each functional team. The leaders will report team status and facilitate all meetings needed for completion of their assignments. The leaders may also seek appropriate representation on their teams if needed. It will be critical that the Implementation Team and functional team leaders maintain communication throughout their assignments.

Functional Teams may include, but not necessarily be limited to the following areas:

- a. Accounts Payable
- b. Client Banking
- c. Client Demographics/ Admissions
- d. Contract Providers
- e. Cost Accounting
- f. Data Set Standards
- g. Data Warehouse
- h. Dieticians
- i. Facilities
- j. Health Insurance Portability and Accountability Act (HIPAA)
- k. Outcomes
- l. Performance
- m. Pharmacists
- n. Prior Authorization
- o. Provider Profile
- p. Quality Management
- q. Accounts Receivable/Payers
- r. Reports & Views
- s. Risk Management/Client Rights
- t. System Redesign
- u. Technology
- v. Training & Support
- w. Treatment/Habilitation Planning

CHAPTER 3 – DEFINITION OF STANDARDS

Summary

The success of CIMOR as an information management and decision support tool depends upon the careful construction of its data and transaction sets. In light of this, DMH has elected to drive the configuration/development and deployment of the system through a common set of standards. To facilitate this the Department has adopted a proprietary decision support framework (the iServ Decision Support Framework) to serve as the foundation of all CIMOR modules and databases. This Framework is based upon a collection of nationally developed data, transaction, reporting, and outcome standards. By using the Framework, DMH ensures that CIMOR will support compliance with the requirements of the various regulators and accrediting agencies that monitor its performance. By selective incorporation of key Missouri and Department standards, the Framework will also enable CIMOR to operate effectively as a distributed information system linked by common data that facilitates decision-making, provides feedback, enhances communication, and thereby improves the quality of care delivery. Using the Decision Support Framework, the CIMOR system will automatically capture management and clinical performance data from routine daily workflows that will:

- Inform and support internal management decision-making and quality improvement
- Enable comparisons with national standards, and
- Support required reporting and site visits of accrediting agencies

The Decision Support Framework builds upon the Mental Health Statistics Improvement Program's Decision Support 2000+ information infrastructure to extend it to support the Mental Retardation and Developmental Disabilities and Alcohol and Drug Abuse domains, in addition to the Mental Health domain.

The Framework is based upon national standards that include:

- MHSIP's Decision Support 2000+
- Health Insurance Portability and Accountability Act of 1996
- The Joint Commission on Accreditation of Healthcare Organizations Accreditation Standards for Hospitals and Behavioral Healthcare Organizations
- The Joint Commission on Accreditation of Healthcare Organizations Outcomes Initiative
- National Committee for Quality Assurance's Report Card and Accreditation Standards for Managed Behavioral Healthcare Organizations
- National Committee for Quality Assurance's Healthcare Employers' Dataset and Information Standard

- Substance Abuse and Mental Health Services Administration’s Treatment Episode Data Set (TEDS)
- National Association of State Directors of Developmental Disabilities Services’ Core Indicators Project
- Federal Block Grant Standards

A. Sources of Data/Transaction Standards

The following describes the sources of data and transaction standards for the Decision Support Framework and for CIMOR.

Decision Support 2000+

The Decision Support Framework follows Decision Support 2000+ recommendations for combining datasets with clinical and system guidelines in order to provide decision support tools such as consumer outcome measures, report cards, and system performance indicators. Decision Support 2000+ is an innovative public health model information infrastructure based on decades of research and policy planning. It is a joint effort by the Survey and Analysis Branch of the Center for Mental Health Services, the Mental Health Statistics Improvement Program (MHSIP), the National Association of State Mental Health Program Directors, and ABT Associates.

Decision Support 2000+ expands upon the MHSIP's Data Standards for Mental Health Decision Support Systems (FN10) to identify minimum core datasets for six different functional areas:

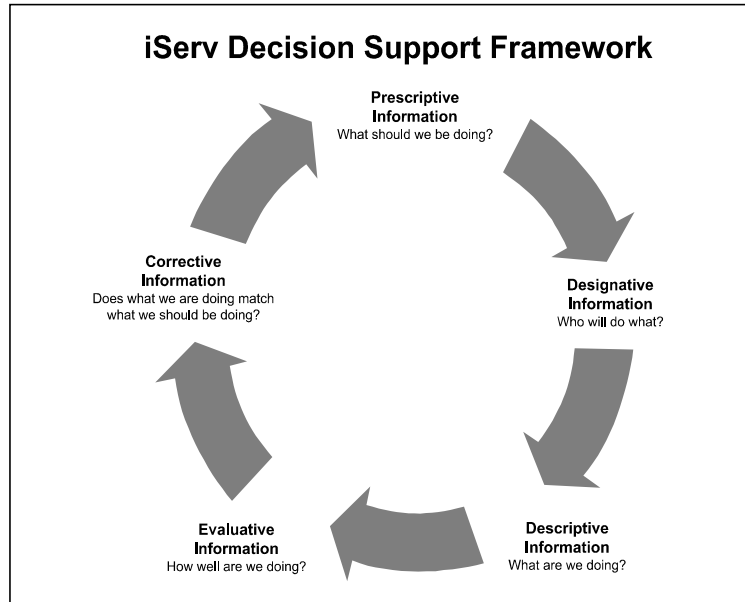
- Population
- Enrollment
- Encounter
- Financial
- Human resource
- Organizational

The Decision Support Framework that underlies CIMOR supports the Decision Support 2000+ cycle [see Figure 1] that organizes information into categories that address different types of questions:

1. Prescriptive information, which answers the question "What should we be doing?" This addresses, for example, stakeholder goals for client outcomes, resource allocation, and service delivery.
2. Designative information, which answers the question "Who will do what?"
3. Descriptive information, which answers the question "What are we doing?" This would include such information as "what services are provided, who uses them, how often they are used, what they cost, and how they are organized and financed."
4. Evaluative information, which answers the question "How well are we doing?" and includes, for example, data about the outcomes of care from both the clients' and the clinicians' perspective.
5. Corrective information, which answers the question "Does what we are doing match what we should be doing?" and collects information, for example, in the form of

performance indicators, report cards, and client outcomes.

Figure 1: Decision Support Framework



CIMOR will be one of the first statewide operational implementations of the Decision Support 2000+ infrastructure, and as such will play an important role in the continued development of that infrastructure.

Health Insurance Portability and Accountability Act of 1996 (HIPAA)

Congress passed the Health Insurance Portability and Accountability Act in 1996. One part of this law, the Administrative Simplification subsection, charged the Secretary of Health and Human Services to develop and promulgate regulations in order to “improve the Medicare and Medicaid programs and other Federal health programs and private health programs, and the effectiveness and efficiency of the health care industry in general, by simplifying the administration of the system and enabling the efficient electronic transmission of certain health information.”

In response to HIPAA’s Administrative Simplification requirements the Secretary of Health and Human Services established standards for eight electronic transactions and for code sets to be used in electronic healthcare transactions. The Secretary has published requirements concerning the use of these standards by health plans, health care clearinghouses, and health care providers such as DMH. The Secretary also established a rule for protecting the privacy of patients’ health information and is now in the process of formulating final rules for healthcare information security and electronic signature standards and national provider and employer identifiers.

HIPAA's Administrative Simplification will have profound impact on all automated data processes employed in health and human service systems of care, and the Decision Support Framework is HIPAA compliant from the ground-up. iServ has been monitoring the progress of this rule set since the Act was passed in 1996 and is implementing all aspects of the HIPAA regulations in the Framework in advance of the mandated adoption schedule.

iServ and DMH will continuously track the HIPAA rules as proposed and released to ensure full CIMOR compliance.

The eight transaction set standards that the Secretary HHS has declared as requirements for electronic healthcare information are:

1. ASC X12 834 - Benefit Enrollment and Maintenance
2. ASC X12N 270/271 - Health Care Eligibility Benefit Inquiry and Response
3. ASC X12N 278 - Health Care Services Review Request and Response
4. ASC X12N 835 - Health Care Payment/Advice
5. ASC X12N 837 - Health Care Claim, Professional, Institutional, and Dental
6. ASC X12N 276/277 - Health Care Claim Status Request and Response
7. NCPDP Telecommunication Standard Format version 3.2
8. ASC X12 820 - Payment Order/Remittance Advice

The last two of these transaction set standards are not relevant to the CIMOR implementation, but the other six transactions sets will be implemented as part of the Decision Support Framework.

Table 6 shows the HIPAA transaction included in the Decision Support Framework by workflow process:

Table 6: HIPAA Transaction Standards

Workflow Process	HIPAA Transaction Set
Client Benefits and Eligibilities	ASC X12 N 834 Benefit Enrollment and Maintenance ASC X12 N 270 Health Care Eligibility Benefit Inquiry ASC X12 N 271 Health Care Benefit Response
Authorization	ASC X12 N 278 Health Care Service Review Request & Response
Billing	ASC X12 N 837 Health Care Claim: Professional & Institutional
Payment Posting / Accts Receivable / Accts Payable	ASC X12 N 835 Health Care Payment/Advice; ASC X12 N 276 Health Care Claim Status Request ASC X12 N 277 Health Care Claims Status Response

The Decision Support Framework uses the data dictionary underlying these HIPAA transactions as its core financial dataset.

The Secretary of HHS has also specified codes sets to be used in conjunction with these transaction sets. These code sets are also included in the Framework's core dataset. "Two types of code sets are required for data elements in the transaction standards to be established under HIPAA: (1) large code sets for

medical data, (2) smaller sets of codes for other data elements such as race/ethnicity, type of facility, and type of unit.”

The standard code sets for different types of medical data are:

- ICD-9-CM
- Current Procedural Terminology (CPT) (level 1 of HCPCS) as maintained and distributed by the AMA.
- Current Dental Terminology (CDT) as maintained and distributed by the ADA for a charge. (Not relevant to DMH, not be included in the Decision Support Framework)
- ICD-9-CM, Volume 3. The proposed standard code set for Inpatient Hospital Services as maintained and distributed by the Health Care Financing Administration, U.S. Department of Health and Human Services.
- Health Care Financing Administration Procedure Coding System (alpha-numeric HCPCS). The proposed standard code set for other health-related services as maintained and distributed by the Health Care Financing Administration, U.S. Department of Health and Human Services.
- National Drug Codes (NDC) as maintained and distributed by the Food and Drug Administration, U.S. Department of Health and Human Services.

Part of the HIPAA ASC X12 transaction set standards is a formal electronic data exchange structure that ensures that any healthcare entity using a transaction set can send and receive transactions from any other healthcare entity. As HCFA recognizes there may be certain transmission modes (e.g. direct data entry processes using a browser) in which the format portion of the standard is inappropriate. In these cases, the Decision Support Framework transaction will conform to the data content portion of the HIPAA standard, but not necessarily use the HIPAA EDI transmission structure.

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) Accreditation Standards

The Decision Support Framework uses the JCAHO's Accreditation Standards for Hospitals and for Behavioral and Managed Behavioral Healthcare Organizations to help establish DMH performance indicators and organizational report cards. For each JCAHO standard the Framework offers a way to track and measure compliance using the data entered by staff as part of their daily tasks. These performance indicators can be combined into an organization report card that will help DMH facilities and the central office with JCAHO reporting, accreditation site visits, and internal quality improvement efforts. The JCAHO Standards focus on two main concerns: care of the individual and organizational functions.

The Decision Support Framework refers to the standards JCAHO has established for the following functions within each of those concerns:

Care of the Individual

- Rights, Responsibilities, and Ethics
- Continuum
- Assessment
- Care
- Education

Organizational Functions

- Improving Organization Performance
- Leadership
- Management of the Environment of Care
- Management of Information
- Management of Human Resources
- Surveillance, Prevention, and Control of Infection

For example, one performance indicator that the Decision Support Framework will offer is a incident tracking form for reporting of client injuries or other lapses during treatment that is then used for organizational comparison on an incident per capita and per number of services basis.

The Joint Commission on Accreditation of Healthcare Organizations Outcomes Initiative and the National Research Institute's ORYX Project

The JCAHO's initiative, introduced in February 1997, integrates outcomes and other performance measurement data into their accreditation process. It is intended to be a flexible and affordable approach for supporting quality improvement efforts in Joint Commission accredited organizations and increasing the value of accreditation.

JCAHO requires that organizations select " measures that are most relevant to their patient populations and strategic measurement objectives at both the managing entity level and component provider level. In addition, they should choose measures that are consistent with other external measurement demands, eliminating further data collection burdens."

To meet this requirement, the National Research Institute (NRI), under the auspices of the National Association of State Mental Health Program Directors (NASMHPD), created ORYX, which is a JCAHO certified instrument to provide the JCAHO outcomes data. The purpose of ORYX is not only to compile and send outcome data to JCAHO, but also to begin to build a set of national data across all state mental

health authorities. Missouri is committed to the ORYX project as a means of providing JCAHO performance measures.

The Decision Support Framework will address data requirements for the ORYX effort. It can also include an optional ORYX-certified instrument called ValuGuard. Already included in the iServ data set, ValuGuard is a consumer survey that collects and norms consumer satisfaction and consumer perception of outcomes. ValuGuard is described more fully later in this plan under Optional Add-ons. ValuGuard is currently used by more than twenty organizations, has approximately 80,000 unique clients in its database, and is normed for national comparisons for organizational and clinical performance.

National Committee for Quality Assurance’s Report Card and Accreditation Standards for Managed Behavioral Healthcare Organizations

The NCQA’s MBHO standards provide a well-thought-out enterprise-wide approach to continuous quality improvement and organizational accountability. By referencing these standards the Decision Support Framework allows for organizations to track, measure, report, and improve their performance using a nationally accepted norm. The functional areas included in NCQA MBHO accreditation and referenced by the Decision Support Framework are:

- Administrative Policies and Procedures
- Quality Management and Improvement
- Access, Availability and Triage
- Utilization Management
- Credentialing and Recredentialing
- Clients' Rights and Responsibilities
- Preventive Behavioral Health Services
- Treatment Records

National Committee for Quality Assurance’s Health Plan Employer Data and Information Set (HEDIS)

The NCQA’s HEDIS is “a set of standardized performance measures designed to ensure that purchasers and consumers have the information they need to reliably compare the performance of managed health care plans.” The performance measures in HEDIS are primarily related to general medical conditions and not to behavioral care. However, where HEDIS measures are relevant to mental health, developmental disabilities, or substance abuse they are incorporated into the Decision Support Framework. This includes such things as HEDIS performance measures and data for ambulatory follow-up after hospitalization for major affective disorder, readmission for major affective disorders, and readmission for chemical dependency.

Substance Abuse and Mental Health Services Administration’s Treatment Episode Data Set (TEDS)

The Decision Support Framework’s core dataset includes the SAMHSA’s Treatment Episode Minimum and Supplemental Data Set (TEDS), in order to collect the necessary data for alcohol and drug treatment services reporting and decision support. TEDS is “an administrative data system providing descriptive information about the national flow of admissions to specialty providers of substance abuse treatment. TEDS is a continuation of the former Client Data System (CDS) and covers an estimated 91% of admissions to TEDS-eligible providers.” Substance abuse provider organizations are required to report to the federal government using TEDS, and that wide base of data provides all substance abuse providers with national data to compare themselves against.

National Association of State Directors of Developmental Disabilities Services’ Core Indicators Project (CIP)

The Decision Support Framework references the National Association of State Directors of Developmental Disabilities Services “Core Indicators Project” (CIP) in order to establish performance objectives for developmentally disabled organizations and services. The CIP’s “ aim is to investigate the feasibility of establishing a nationally-recognized set of performance indicators that will provide solid, reliable information concerning the effectiveness of a state’s developmental disabilities service system along various dimensions of performance and support valid comparisons with results being achieved in other states. The development of performance indicators that support such comparisons from state to state entails not only selecting indicators of common interest to states but also overcoming a variety of problems and barriers in the arenas of data collection and measurement across multiple jurisdictions. Fifteen states are participating on the CIP Project Steering Committee; seven of these states have agreed to compile the data necessary to determine whether a particular indicator reveals sound information regarding system performance.”

Federal Block Grant Standards

DMH relies on Federal Block Grant funds whose management has certain unique data requirements. A Functional Team will identify these requirements using the functional analysis process described in Chapter 5 and relying on the principles for developing adjunct data sets described in Chapter 1. This analysis will yield additional data elements to be included in the Decision Support Framework and CIMOR.

B. Determination of Other Data Standards (MO, Project)

Data standards beyond those of regulatory bodies may apply to CIMOR.

Where there may be information needs within the Department that are not in the purview of external

standards authorities, the Functional Team described above will identify other data elements for inclusion in the Decision Support Framework and CIMOR. Whenever the iServ product has implemented data items in an operational product, significant deference will be given to their definitions, in order to keep CIMOR in sync with the Decision Support Framework, thereby reducing development costs and taking advantage of standard features.

C. Technical Communications Standards

A Functional Team will be convened to make final determinations about technical communication standards. Potential communications standards for the CIMOR System can be categorized as follows:

1. Communication with Department of Mental Health facilities

- Interactive communication with system users located at Department of Mental Health sites – this would include Central Office and Regional Office, CPS Adult and Youth Facilities, MRDD Habilitation Centers, Regional Centers and Satellite Offices – TPC/IP packets over existing or enhanced Department LAN and WAN facilities.
- Inter-Application communication between Operational Subsystems and Administrative and Support Subsystems – XML transactions over existing or enhanced Department WAN facilities using software facilities such as, or similar to, Microsoft Message Queue Server and Biztalk to deliver and process messages.

2. Communication with Non – Department of Mental Health facilities

- Interactive communication with system users located at NON Department of Mental Health sites – this would include Enrolling Providers, Non-Enrolling Providers and Other Data Sources (individual contractors, etc.) – TPC-IP packets over an Internet based Virtual Private Network (VPN).
- Inter-Application communication between Operational Subsystems and Administrative and Support Subsystems – XML transactions over an Internet based Virtual Private Network (VPN) using software such as, or similar to, Microsoft Message Queue Server, IBM MQ Series and Biztalk to deliver and process messages.

3. Communication from Financial Clearinghouse applications to Special Purpose Databases

- Inter-Application communication feeding information from applications running in the Financial Clearinghouse to various Special Purpose Databases – XML transactions over existing or enhanced Department LAN facilities using software facilities such as, or similar to, Microsoft Message Queue Server and Biztalk to deliver and process messages.

NOTE: For packets passing over the internet, the Department may wish to consider encryption.

CHAPTER 4 – OPERATIONAL ENVIRONMENT

Summary

Understanding the current DMH operational environment is crucial to the success of the CIMOR Project. Describing that environment in terms that accurately represent the current and projected numbers and types of users, how they access the current system, their volume of use, and how that use is distributed among the various facility and provider types is imperative to provide the basis for making assumptions about CIMOR system requirements. Chapter 4 provides basic descriptive information about the Central Office, its staff and their deployment and then groups the 27 facilities located statewide by division and facility type. System access and use by the contracted providers affiliated with the divisions are described as well as the provider activities the current system supports. Specific transaction volume estimates for current (4614) and potential DMH system users (5446) are developed. DMH user transaction volumes are expected to rise 20% from the current 5,950,000 because CIMOR will support more functionality. Similar estimates are developed and discussed for contracted providers: The number of contract provider user transactions is projected to remain steady at 18,750,000. Increases in numbers of providers and transactions volumes are expected to be offset by CIMOR design efficiencies.

A. DMH Central Office, Facilities, & Contract Providers

The Missouri Department of Mental Health (DMH) consists of a central administrative office located in Jefferson City, and 27 facilities located around the state.

1. **Central Office:** This administrative office supports an on-site staff, as well as a growing population of mobile workers. This includes regional administrative staff located throughout the state. In addition, the central office currently supports approximately 250 private contractor dial-up connections statewide for the ADA and CPS divisions.
2. **CPS Psychiatric Facilities:** These are typically large hospital buildings or hospital campuses with group homes. Most of the staff works on-location, but there is a growing demand for mobile access and wireless connectivity with these facilities. These facilities provide a wide range of care needs, from short-term acute care, to long-term inpatient care, to civil and forensic (court-ordered) inpatient services. Some of these facilities also support CPS regional activities, such as supported community living, mental health coordinators, and forensic after-care workers.
3. **MRDD Habilitation Centers:** These are typically hospital campuses, some with multiple sites, with on-campus group homes. These centers provide a wide range of long-term care for people with developmental disabilities. In addition, the habilitation centers staff group homes and supported living in the community. All staff work on location with a limited demand for mobile access.
4. **MRDD Regional Centers:** These are typically single building facilities (or with detached maintenance buildings) that support mobile workers and large groups of remote contracted providers. Regional Centers also have several remote branch offices to assist in serving their region of the state. Given the distribution of these facilities, they have to support the largest groups of dial-up based populations. These facilities provide case management and administration of contracted services for residential and home-based clients.
5. **MRDD Dial-up Providers:** Currently, approximately 800 contracted providers use dial-up connections to the MRDD regional center's AS/400s to input delivered services for payment. This number is an estimate of one connection per provider. There could be a potential for additional connections after implementation of CIMOR. These providers currently have limited view access to client demographics. The size of provider varies from a single person to a county agency.
6. **ADA/CPS Providers:** The ADA and CPS provider activities range from enrollment and authorization of services to billing of delivered services. Some of these providers

are on the network and some dial in. Some of these providers use the DMH system and others use an up-front system to allow them to batch in or do double entry. Approximately 250 ADA/CPS provider dial-up connections are currently in place. This number is an estimate of one connection per provider. There could be a potential for additional connections after implementation of CIMOR.

7. Other Non-Enrolling Providers: Other CPS and MRDD providers do not currently use dial-up connections to submit encounter data for billing. Invoices for the services these providers render are currently paper documents generated by DMH and mailed to the provider for verification. Some or all of these providers may eventually use CIMOR on-line.

1. Current DMH Users and Transaction Volumes

The number and distribution of current DMH users of client and billing-related information systems are shown in Table 7. Also shown are estimates of transaction volumes.

Table 7: Current users on the DMH network:

Facility	# Users	1000's Transactions *
Central Office	390	200
CPS/ADA Standalone District Offices	23	200
MRDD Habilitation Centers:		
Bellefontaine Hab Center	100	180
Marshall Hab Center	150	290
Higginsville Hab Center	150	90
Nevada Hab Center	90	70
St Louis DDTC	62	130
CPS Psychiatric Facilities:		
Fulton State Hospital	550	960
Mid-Missouri Mental Health Center	125	80
Western MO Mental Health Ctr.	400	260
Hawthorne Children's Psych Hospital	80	110
Cottonwood Treatment Center	50	30
St. Louis Psychiatric Rehabilitation Center	500	170
Northwest Missouri Psychiatric Rehab. Center	275	470
Metropolitan St. Louis Psychiatric Center	200	110
Southeast Missouri Mental Health Center	250	120
Southwest Missouri Psychiatric Rehab. Center	30	610
MRDD Regional Centers:		
Albany Regional Center	40	100
Kansas City Regional Center	125	440
Kirksville Regional Center	50	60
Hannibal Regional Center	50	80
Joplin Regional Center	110	100
Springfield Regional Center	120	170
Rolla Regional Center	60	100
Poplar Bluff Regional Center/Southeast Resid.	100	110
Sikeston Regional Center/Southeast Resid.	80	100

Facility	# Users	1000's Transactions *
St Louis Regional Center	360	820
Central Missouri Regional Center	94	200
Department Totals	4614	5,950

Current DMH users' transaction volumes are not easily available across all systems. The actual number of transactions is clearly related to the number of consumers served, but is also highly dependent on the data being collected and the systems that are used. The CIMOR system will be completely different operationally from the current mix of systems. Therefore, we must use a model to estimate the transaction volume, by site, in CIMOR.

The transaction counts in Table 7 are the result of a model using a linear combination of factors associated with the number of clients at each facility and depending on facility type. [See Appendix 8: DMH Transaction Volume Spreadsheet.] These are user-level transactions, such as "logging a service" or "changing a client's address." The actual number of database-level transactions is estimated to be an order of magnitude higher.

2. Potential DMH Users and Transaction Volumes

To estimate the total number of users possibly impacted by CIMOR, Table 8 identifies all DMH employees by State of Missouri Office of Administration job category as of January 29, 2001.

Table 8: Potential DMH Users by Job Category

Job Category	Number of Users	
General Clerical	739	**
Data Processing	154	*
Stores, Procurement and Property	79	
Accounting, Fiscal Control and Related	233	*
Personnel, Research and Information	82	*
General Administration	53	*
Miscellaneous (Med Clerks, Reimb. Offcr, Housing Staff)	197	*
Museum Curator	1	
General Services	361	
Dietary & Nutrition Services	377	*
Education	36	*
Dental	9	*
Laboratory	14	*
Medical	116	*
Nursing (RN, LPN, DA, PA, BT, and CATS)	4,853	**
Therapy, Rehabilitation & Related (includes Case Managers)	1,185	*
Miscellaneous Health & Related	268	*
Other Engineering & Applied Sciences	1	
Public Welfare (CCA, LCSW, SW Supervisors)	283	*
Labor, Trades & Plant Maintenance	318	
Plant Operator, Maintenance & Safety	40	
Miscellaneous Trades	12	
Broadband Managers	209	*
Unclassified Employees	2,096	**

Job Category	Number of Users
Total Employees:	11,716
Total impacted:	5,456 *

* Approx. individuals impacted

** Approx. 2240 individuals in these classes will be impacted

The number of user-level CIMOR transactions is estimated to be somewhat greater than the current usage estimates in the previous section. It is reasonable to expect CIMOR to process about 20% more transactions since CIMOR will support more functions than the current client-services-billing systems.

B. Contract Providers

1. Current Contract Providers and Transaction Volumes

Table 9 summarizes the estimated current transaction volume for contract providers. These are based upon current estimated connections for contract providers (representing one connection per provider). The estimated number of users is based on 2 per connection for CPS/ADA providers and 1.5 per connection for MRDD providers, which are in general, smaller organizations.

Table 9: Estimated Contract Provider Current Transaction Volumes

	Connections	Users	1000's Transactions
CPS/ADA Providers (estimated connections)	250	500	4,020
MRDD Dial-up Providers (est. connections)	800	1200	14,730
Total Provider Connections	1050	1700	18,750

The estimated number of transactions is derived in a manner similar to the model used in the previous section. [See Appendix 9: Contract Provider Transaction Volume Spreadsheet for additional details]

2. Potential Contract Provider Users and Transaction Volumes

The potential number of user-level CIMOR transactions is estimated to be about the same for Contract Providers as the current transaction estimates. While there may be some new functionality in CIMOR, there should be efficiencies in design that balance those increased transactions.

CHAPTER 5 – FUNCTIONAL ANALYSIS

Summary

Functional Analysis is at the heart of the iServ and Implementation Team approach to CIMOR. Rather than simply installing software in computers, this approach first requires that we clarify and characterize how the applications and databases will be used once CIMOR is fully implemented. Already underway in pre-implementation meetings, and continuing in a reiterative fashion during the design phase for each MOdel, functional analysis will enable the implementation team to systematically determine user requirements. This in turn allows a more comprehensive understanding of data needs before proceeding to a description of technical specifications for design, configuration/development and deployment.

A. Determining Functional Requirements

The process of functional analysis in CIMOR is comprised of a number of steps that include:

1. Describing work activities at each DMH facility and provider type, as well as in the Central Office and its regional administrative offices.
2. Describing how work activities are organized into role_functions; that is the way they are grouped to accomplish certain tasks. Such groupings include, but are not limited to:
 - a. Enrollment
 - b. Admission
 - c. Assessment
 - d. Authorization
 - e. Treatment planning
 - f. Provision of services
 - g. Case management,
 - h. Discharge planning
 - i. Quality management
 - j. Billing
 - k. Claiming
 - l. Internal and external management reporting
3. Describing the relationship of role_functions to each other, and how their activities feed or rely upon the completion of other activities. When completed this results in a description of each facility or provider- type's *workflow*.
4. Determining the information necessary to accomplish role_functions and the activities that comprise them.
5. Determining the pieces of data that actually make up the information described in step 4.
6. Determining the source(s) of information/data and how it is, or needs to be, accessed.
7. Determining the information/ data each activity produces.
8. Determining if and how the information/ data is recorded.
9. Determining if and how recorded information/data is made available for other persons to view as they accomplish activities related to each role_function.
10. Aggregating the findings of steps 5 - 9 to describe the *dataflow* that parallels (or needs to parallel) the organization's workflow.

The analytic process itself will be coordinated and staffed by iServ and will include subject matter experts from DMH facilities and contracted providers. These experts will be organized into role_function workgroups. The workgroups will use templates and data sets provided by iServ to quickly describe each role_function, its set of activities, and the data used and produced by those activities [See Appendix 10 for a sample Functional Analysis Template]. The workgroups are also expected to arrange the role_function in an order that describes preferred workflow and dataflow.

The efforts of the workgroups will be guided by several principles directed at producing the most effective implementation possible. These include:

1. Do not be limited to describing how things are accomplished at the present. Analysis should include changes to the work and dataflow that are already planned and recommendations about other changes that would be helpful.
2. Wherever possible, consolidate workflows. Subject every role_function and every activity in it to scrutiny. Retain only those activities that have a distinct functional purpose.
3. CIMOR will only support *Core Processes*. Look for the ways in which activities that are directed at accomplishing the same role_functions across program, facility or divisions types can be standardized. Minimize the requirement to support role_functions, activities and workflows requiring or producing idiosyncratic data.
4. Optimize data and form sets. Look for opportunities to eliminate or consolidate data, forms, reports etc.
5. Conform role_functions, activities, data sets etc. as much as possible to those already standardized or recommended by organizations such as JCAHO, CARF, HIPAA etc.
6. As the functional analysis is completed, the results will be used by iServ, OIS and perhaps additional workgroups to describe the final set of CIMOR user requirements and data sets. While preserving functional distinctions that really make a difference, this next step in the process will roll-up the detailed analyses to produce a consolidated set of requirements. These in turn will be combined with externally required data and transaction standards to generate database and module design specifications. As the Implementation continues, the specifications will drive configuration/development and deployment activities.

B. Forms and Data Set Analysis and Requirements

The gathering and compiling of requirements for the CIMOR system will follow standard iServ Systems implementation methodologies. The process is guided by the following principles:

1. Requirements common to existing behavioral care practice management and clinical

- applications already exist and do not need to be “re-discovered” in this process.
2. The DMH Implementation Team has adopted for the CIMOR project the iServ Decision Support Framework, which includes data set and transaction standards described in Chapter 3. The requirements imposed by these Standards are assumed in this process and already have been incorporated into CIMOR.
 3. The requirements included (both common/pre-existing and Standards imposed) will be compared with requirements drawn from the many and diverse operational systems currently in use within the Department with specific regard for elements of commonality / synchronization.
 4. The requirements process will primarily be concerned with the identification of outliers or exceptions defined as data or data sets not currently existing within the iServ Systems databases or applications or the iServ Decision Support Framework.

The actual requirements gathering process is referenced in Chapter 5. A above. Workgroups described in that section will be provided with requirements “templates” or spreadsheets listing format, content and functionality to be compared and contrasted with information from existing operational systems. Analysis of the information gathered will determine what data form, content, and functionality will need to be added or incorporated into CIMOR. The process will give careful consideration to “unnecessary” or extraneous data that may not need to be included into CIMOR.

The compilation of all requirements will result in a draft requirements document for review by the Implementation Project Team. Once accepted by the Implementation Team, the requirements document will be used to inform the Technical Specification Process (see Section C. which follows). [See Appendix 11: Forms/Data Requirements Document]

C. Technical Specification Process

The process of completing Technical Specifications is necessary for translating functional requirements into working software. Technical specifications are also useful whenever a computer system, sub-system, or interface to another system is required that is outside the scope of the services and functionality provided by CIMOR. The writing of Technical Specification Documents will follow the requirements gathering processes described in A. and B. above.

Appendix 12 provides a template for the Technical Specification Document that will be used for all new specifications.

CHAPTER 6 – TECHNICAL DESIGN

Summary

This chapter describes the technical design for the CIMOR system, including several optional functional and operational platforms on which the system may be deployed. This technical design includes the central office administration and operational support sub-systems as well as the provider side operational sub-systems (also referred to as services management systems).

Central to the technical design specifications are the standards adopted and incorporated into CIMOR. As described in Chapter 3, these standards include data standards (multiple sources) and transaction standards (communication and messaging) that will link the provider side sub-systems to the central operational sub-systems.

The technical design for CIMOR also includes the specification of “shims” and interfaces that will be required, either on a temporary basis during “parallel” operations phases of the project, or permanently once legacy systems are turned off.

The overall design of CIMOR is presented schematically in Appendix 13. (The reader is advised to refer to that diagram for a summary view of the CIMOR architecture.)

The technical design of CIMOR has been carefully crafted to allow for maximum flexibility within an environment with disparate functional requirements. This design feature is critical in accomplishing the complex and critically staged deployment across the Department’s varied and diverse operational environment (see Chapter 12 for full description of deployment plan).

CIMOR is one system. However, for purposes of description and technical design, it is described in sections, each with various functional modules. Though the terms “module” or “modular design” are used to describe the system, these terms refer primarily to functional modules rather than to components that can or will be added or deleted at some point in the deployment.

Finally, this chapter addresses the technical considerations relating to the optional “delivery” methodologies that are under consideration for deployment in CIMOR. These delivery methodologies include:

- Client/server in a Local Area Network (LAN);
- Client/server plus Terminal Server and/or Citrix in an extended LAN or Wide Area Network (WAN) environment;
- Client/server with browser interface and IIS server;

- Client/server plus MicroSoft.net strategies for B-to-B document routing and messaging via BizTalk server;
- Thin client application only (Application Service Provider model); and
- Access to Central Financial Clearinghouse/Special Purpose Databases via independent browser.

A. Central Administrative and Operational Support Sub-systems

The Central Administrative and Operational Support Sub-systems consist of several components maintained by DMH OIS centrally for the support of and use by the provider side operational divisions. These components include:

- The Central Financial Clearinghouse
- The Special Purpose Data Bases
- Master Client Profile (an On-line Transactional Processor or OLTP)
- Delivered Services Data Base (an On-line Analytical Processor or OLAP)

1. Central Financial Clearinghouse

The Central Financial Clearinghouse is defined as a high volume transactional engine capable of receiving on-line real time or batched billing data via standard data transaction formats and communication standards (See Chapter 3: Standards). The central financial clearinghouse engine consists of a SQL 2000 (or later) database and a Visual FoxPro business rules mid layer accessible by a browser interface, real-time direct access via a WAN, or by batched transactions. The Clearinghouse is not intended to replace functionality currently accounted for in SAM II. Rather it supports the collection, processing and transition of DMH financial data to SAM II and other systems / data bases external to CIMOR.

The Central Financial Clearinghouse supports:

- Tracking of Service Authorization Requests.
- Processing of Claims submitted by Service Providers including checks against authorization compliance and validation of claims in accordance with department and payer generated rules.
- Detailed Accounts Receivable Tracking related to client services.
- Provider Accounts Payable including multiple payment methodologies, e.g., fee-based, case rate, & capitated payments.
- DMH Allocation Tracking.
- Central Client Banking Systems which tracks client fund accounts and interacts with the claims system where client is first financially responsible payer.
- Provision of data to Special Purpose databases.
- Provisions of standard documents to external payers, SAM II.

2. Special Purpose Databases

a. Master Client Profile

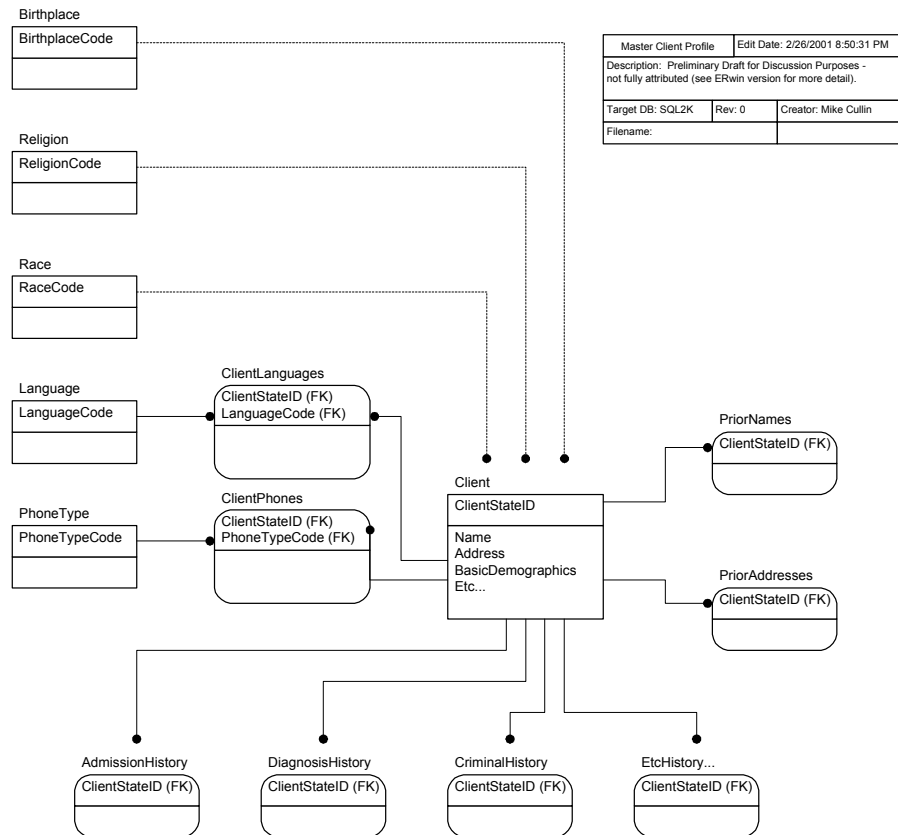
While considerable requirement and design work remains to be done, a number of significant aspects of the Master Client Profile are known at this time. It is a “client-centric” repository of information that serves a number of different, but related, purposes:

- (1) It is, as the name implies, the single definitive source of information used to uniquely identify any client of the Department of Mental Health. It is accessed in real time by any Department employee or Contract Provider, located anywhere in the State, to determine if a client is already known to the Department from some previous contact.
- (2) In cases where the client is unknown to the Department, it is the entry point for demographic and other enrollment information gathered from and about the client at the time of first contact with the Department anywhere in the State.
- (3) Over time, summary information going well beyond basic demographic data will be collected in the Master Client Profile repository from a number of sources. This likely includes summary level historical information about admissions, discharges, assignment of services, diagnoses, criminal activity, etc. This information will be collected either directly and/or via the Financial Clearinghouse from Department facilities, Enrolling and non-Enrolling Providers and Other Data Sources. Once gathered, this information will be presented to the Master Client Profile user to aid in providing a complete synopsis of State-wide Department interaction with an existing client.

In some sense the Master Client Profile can be considered the Department of Mental Health “name server” for client identification purposes. This is consistent with the approach taken by other organizations that have the need to uniquely identify a person, and make information about that person available over a wide geographic area.

The CIMOR team has defined a very preliminary database design for the Master Client Profile. It is currently being used for scoping and discussion purposes only. Figure 2 illustrates this design at this early stage. It requires significant expansion and revision following completion of the functional analysis and technical specification process described in Chapter 5.

Figure 1: Preliminary Entity Relationship Diagram (ERD) for Master Client Profile



The Master Client Profile will be used in the course of routine transactions by a large number of provider end-users. Thus, it is clear that its database needs to be an On-line Transaction Processing (OLTP) design as opposed to an On-line Analytical Processing (OLAP) design. When completed, it is anticipated that this database will be implemented using the Microsoft SQL Server 2000 database engine. This will provide the level of performance and stability necessary for such a critical component. In addition, this version of the database engine provides features that make it significantly easier to handle XML transactions arriving from other Department and non-Department applications.

The toolsets that will be used to develop the browser-based interactive interface and the transaction-based (XML) inter-application transactions have yet to be fully researched or selected. A traditional OLTP data driven requirements, modeling and design process also remains to be completed. This will derive Master Client Profile functionality for demonstration as part of the MModel.1 deliverable.

b. Delivered Services Special Purpose Database

The success of developing a data warehouse is greatly increased by a sound understanding of the organization end users and their requirements. Without this understanding, data warehousing will likely become an exercise in futility. The approach used to gather the analytic requirements differs to some degree from a more traditional, data-driven requirements analysis. Data warehouse designers must understand the key factors driving the organization in order to effectively determine requirements and translate them into design considerations. These requirements establish the foundation for the three parallel tracks focused on technology, data, and end user applications.

The approach is to interview key personnel who have a need to search and analyze quantitative data about the services that DMH provides to customers. Each interviewee will be asked for their organization objects, analytic requirements, information requirements, and criteria for success. The interview result will then be summarized into Critical Organization Objectives and Issues, Requirements, Preliminary Data Analysis, and Success Criteria.

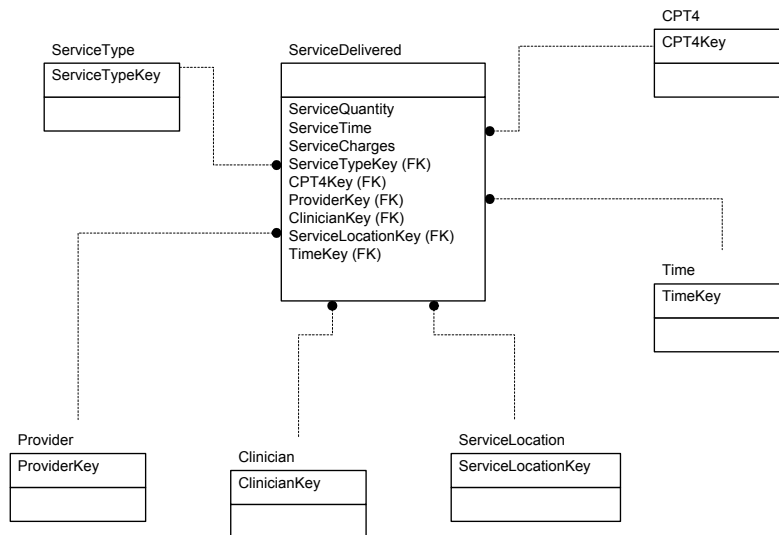
The following example illustrates how the Implementation Team will assemble the results of such a functional analysis. Although the contents of this example are meant only to illustrate the process, they also describe some of the results that are likely to be derived in examining the requirements for the Delivered Services Special Purpose Database:

- (1) Critical Organization Objectives and Issues
 - Improve the quality of care provided.
 - Improve the efficiency of operations at all facilities.
 - Determine key providers and clinicians for various services.
- (2) Requirements
 - Service Analysis
Analyze performance by service type at a facility versus the whole state.
Analyze dollar charges generated by quarter for selected services. Analyze the time required to provide a service at each facility
 - Provider Analysis
Analyze dollar charges generated by month by provider. Analyze the quantity of services delivered by location by provider
 - Clinician Analysis
Analyze the quantity of services provided by clinicians by month
 - Location Analysis
Analyze the dollar charges generated by month by location.
- (3) Preliminary Data Analysis

- Facts:
 - ♦ Quantity of Service Delivered
 - ♦ Amount of Time Required to Deliver Service
 - ♦ Dollar Charges for Service Delivered
 - Dimensions:
 - ♦ Service Type
 - ♦ CPT4
 - ♦ Provider
 - ♦ Clinician
 - ♦ Service Location
 - ♦ Time
- (4) Success Criteria
- Productive usage of the Special Purpose Database with no more than one day of initial user education.
 - Access to two years of history to support trend analysis.
- (5) Glossary
- Special Purpose Database - A logical subset of the complete data warehouse. It represents a restriction of the data warehouse to a single business process or to a group of related business processes targeted toward a particular business group. The Special Purpose Database is represented by a dimensional model that is made up of one fact table and two- to-many dimension tables.
 - Data Warehouse - It is the union of all the constituent Special Purpose Databases. The queryable and non-operational source of data in the enterprise.
 - Dimension Table - Is one of a set of companion tables to a Fact table. Each dimension is identified by its primary key. Its primary key serves as an identifier in the Fact table where it is joined together with other dimension primary keys. Most dimension tables contain many textual attributes that are the basis for constraining and grouping within data warehouse queries.
 - Fact Table - The primary table of measurements of the business that includes numeric and additive data.

Figure 3, following, is a draft version of a database design that will be used for the creation of the MOdel.1 Working Model of this Special Purpose Database. It will be used for discussion and demonstration only. A live production version of the Delivered Services Database will be available to DMH personnel only after functional analysis, as outlined in Chapter 5, is completed and the working model is modified to accommodate the requirements discovered in that process. Ultimately, the Delivered Services Database will be implemented on Microsoft Analysis Server 2000 (OLAP). A user interface tool will be required to access data within it.

Figure 2: Draft Database Design



B. Provider Operations Subsystems

The Provider Operations Subsystems are fully functional services management applications installed at each of the Department's facilities. Appendix 13 (the Technical Design diagram) indicates the operational types of facilities (Long Term Care, Acute Care, etc.) supported by these applications. By the time M0del.3 is fully deployed (see Chapters 1 and 12) each provider operations subsystem will include Tier 1 and Tier 2 modules and access interfaces via browser to the central office modules (Financial Clearinghouse, Master Client Profile and Delivered Services Database). Thus, the Provider Operations subsystems will support collection, communication and reporting on :

- Enrollment
- Assessments
- Treatment/Habilitation Plans
- Delivered Services
- Discharge and Aftercare Plans
- Pharmacy
- Scheduling

Depending on the specific needs of the facility or contract provider the provider applications may be installed on one or more of the following platforms:

- Client/server applications built in Microsoft Visual Studio running on Windows NT operating systems (servers) with Windows 95/98/2000/ME desktop operating systems (clients).

- Client/server applications running over WAN via Citrix/Terminal Server software
- Thin client applications running via Microsoft IE browser

It is also anticipated that each of these applications will ultimately run on Microsoft Server SQL 2000 databases.

C. Third-Party Applications

The third-party applications represented in CIMOR include a medication and prescription management/reporting system; a dietetics inventory and menu management system; and a laboratory module.

1. Pharmaceutical Management System

There are three optional components for the proposed pharmaceutical management system for CIMOR. The system is described as a total unit with the understanding that DMH has the option of including any or all of the components of the total system.

a) Medication Management and Prescribing System

The CIMOR system will contain a medication management and prescribing system. The system will be internet-based and will allow practitioners real-time access to data on medications and related clinical information. This component of the pharmacy system will be included as part of the MOdel.3 deliverable.

The medication management and prescribing system includes the four following functional categories:

Medication Management

- Real-time access
- Patient medication history
- Expiring orders and refills due
- Diagnoses
- Allergies and alerts
- Client demographics
- File access for on-call or covering physicians

ePrescribing

- Supports on-line prescribing
- Potential integration with handheld devices
- Minimizes or eliminates handwriting recognition problems
- Automatically schedules patient/client refills
- Tracks and document use of samples

On-line (Point-of-Prescribing) Resources

- Drug/food/allergy interactions
- Patient medication education materials
- Reviews of peer prescribing practices with new or unfamiliar medications
- Creation of library of personal prescribing patterns
- Access to new developments in medication practice
- View prescribing patterns for diagnoses in Behavioral Health Care
- Direct links to clinical and professional resources

Reporting and Administration

- Tracks prescribing patterns within organization / department
- Standard and custom report capabilities available on screen
- Data integration with electronic patient records

b) In-patient Facility or Centralized Inventory System

The CIMOR system could contain an optional pharmacy module for larger in-patient facilities that need inventory control, inventory tracking, purchase order production and receiving; unit dose, modified unit dose, bulk dispensing, and tracking of floor stock; printing of flexible labels; and interface to hospital A/R system. The in-patient module would reside on the server housing the operational sub-systems of the major facilities.

c) Pharmaceutical Reporting OLAP Database

The CIMOR system may also include a centralized special purpose database (an on-line analytical processor) for aggregating and reporting pharmaceutical data. (see Chapter 16). Both modules a) and b) described above would export data to stock this database. Reports would be available via browser access.

2. Dietetic Services Management System

The *ChefTec* Client Software and *CorTec* Software distributed by Culinary Software Services are included

as an optional CIMOR module for dietetic services management. The *Cheftec/Cortec* system runs on a 32-bit platform (Windows 98/95/NT/2000/ ME) with easy to use interfaces providing access to over 1900 pre-loaded inventory items; an unlimited number of recipes; inventory control, ordering and purchasing module; and a nutritional analysis module with over 1300 inventory items.

DMH retains the option to choose another dietetic services package. However, regardless of whether this module is comprised of *ChefTec*, *CorTec* or another package an icon would reside on the CIMOR desktop at the facilities requiring the dietetic module. Clicking on this icon would immediately launch the browser interface to the dietetic services module allowing internet communication between the central server and the user.

3. Laboratory Module

CIMOR will have a laboratory module, but it is anticipated that it will be a functional component of the Provider Operations Subsystems fully integrated within the application. Likely delivered as part of MOdel. 4, requirements for this module will generally conform to the content and functionality as stated in the RFP. A Functional Team will refine these requirements as described in Chapter 5. The Functional Team will also identify interface requirements between CIMOR and applicable external laboratory reporting systems prior to interface construction.

CHAPTER 7 – ACCESS TO INFORMATION

Summary

A driving principle for CIMOR system development and deployment is that it must support sharing information across the DMH “Enterprise” as part of its decision support feature. To accomplish this, DMH must have clear, effective policies and strategies for protecting the confidentiality, preserving the security, and improving the accessibility of information. The CIMOR task is therefore to deliver across the Enterprise all information that its providers and staff members need to do their work, within the constraints of confidentiality and security imposed by internal policy and external regulatory guidelines. Chapter 7 discusses access and dissemination of information as it pertains to confidentiality and security policy, and strategy with regard to reporting.

Effective and appropriate information sharing is guided by and subject to applicable state and federal statutes and regulations. As described in Chapter 3, the Health Insurance Portability and Accountability Act of 1996 (HIPAA) creates new standards and specific requirements in the area of confidentiality and security. In response, DMH has formed a HIPAA Compliance Task Force that is charged with identifying, evaluating, and redefining the Department’s approach to techniques, policies, and procedures related to security and confidentiality. The CIMOR project will comply with HIPAA’s rules (and other Federal standards, e.g., Federal ADA confidentiality and reporting standards) pertaining to individual health information and electronic signature by implementing four levels of application security:

- Log-on security
- Workflow process security
- Tool security
- Client security

DMH extends its network security provisions to the Internet where it is used as part of the DMH communications infrastructure with encryption levels meeting or exceeding the minimum HIPAA specifications.

One of the four goals of the DMH IT Strategic Plan is to “provide access to high quality data and decision support services.” Consistent with this goal, DMH intends to expand its Decision Support efforts throughout the Department by providing tools and advice on how to use departmental information resources. As part of this effort, the CIMOR system will provide both operational and analytic reporting capabilities to end-users.

A. Access to Information – Confidentiality and Security Policy

A driving principle for CIMOR system development and deployment is that it must support sharing information across the DMH “Enterprise”. Applicable state and federal statutes and regulations are a guiding force behind how this is accomplished. In accordance with these statutes and regulations, DMH already has several processes in place that protect the confidentiality of DMH data and specifically, client-related data. In addition, there are security measures and technologies that protect systems and data from unauthorized access.

However, as described in Chapter 3, the Health Insurance Portability and Accountability Act of 1996 (HIPAA) creates new standards and specific requirements in the area of confidentiality and security. Accordingly, DMH has formed a HIPAA Compliance Task Force that is charged with identifying, evaluating, and redefining the Department’s approach to technologies, policies, and procedures related to security and confidentiality. In addition, specific reference will be made by this Task force to the federal standards for Alcohol and Drug Abuse information release and reporting. The Task Force’s recommendations will be embodied in CIMOR, specifically in the data and transaction standards upon which it is based (see Chapter 3) and the integration of the most up-to-date technology available for managing access to its subsystems.

B. Access to Information – Confidentiality and Security Strategies

1. Application Security

In response to HIPAA the Secretary of Health and Human Services has issued a final rule for *Standards for Privacy of Individually Identifiable Health Information* and a proposed rule for *Security and Electronic Signature Standards*.

The CIMOR system will comply with the provisions of both of these rules by implementing four levels of application security:

1. Log-on security
2. Workflow process security
3. Tool security
4. Client security

The CIMOR system administrator will manage all four levels of security through user folders.

Each user has a unique log-on and password that is set and maintained by the system administrator. Different types of users are given access to different workflow process tools within CIMOR, such as scheduling, diagnosis, etc. In some cases access to a workflow process tool may be limited to read-only mode. In addition, CIMOR tools like electronic forms, contact types, and reports can be classified into

groups with access limited to certain users. Finally, access to individual client clinical data is limited to administrative personnel and clinical staff who are on the client's care team.

Standards for Privacy of Individually Identifiable Health Information

The HIPAA standard for privacy holds that “that protected health information not be used or disclosed by covered entities except as authorized by the individual who is the subject of such information or as explicitly provided by this rule. Under this proposal, most uses and disclosures of an individual's protected health information would not require explicit authorization by the individual, but would be restricted by the provisions of the rule.”

CIMOR policies, procedures and technologies are specifically directed at ensuring compliance with this rule. For additional information on the policy implications of the rule, see Appendix 14: HIPAA Policy Implications.

Security and Electronic Signature Standards

The goal of the proposed HIPAA rule for *Security and Electronic Signature Standards* is ensuring that “the confidentiality and privacy of health care information a covered entity electronically collects, maintains, uses, or transmits is secure.” “The security standard is a set of requirements with implementation features that providers, plans, and clearinghouses must include in their operations to assure that electronic health information pertaining to an individual remains secure. The implementation features address specific aspects of the requirements. The standard does not reference or advocate specific technology.”

To meet this rule the DMH will need to comply with the proposed organizational policies, practices, and procedures. The CIMOR system will, in turn, comply with eight proposed technical practices and procedures with regards to:

- Individual authentication of users
- Access controls
- Audit trails
- Physical security and disaster recovery
- Protection of remote access points
- Protection of external electronic communications
- Software discipline
- System assessment.

In addition the rule identifies “a potential need to associate signature capability with information being electronically stored or transmitted. The electronic signature standard is applicable only with respect to use with the specific transactions defined in the Health Insurance Portability and Accountability Act of

1996, and when it has been determined that an electronic signature must be used.”

The Implementation Team will track the development of national standards for electronic signatures and make a decision about implementing one when a standard approach emerges.

2. Network and Web Security

It is critical that DMH maintain a highly secure network and extend that security to the Internet where it is used as part of the DMH communications infrastructure.

Security of the DMH network is planned and coordinated through Central Office. No “holes” are allowed in the system except through firewalls maintained by Central Office staff. The “perimeter” security structure of DMH includes protection at the Internet level (VPN, DMZ structures, firewalls), the private dial-up network level (access control, authentication, accounting), and at the connection level to the State Data Center (filtering routers).

Confidential data traveling over connections external to the DMH private network is encrypted, with the encryption level meeting or exceeding the minimum specifications of the HIPAA legislation. In addition, authorization for accessing confidential data over the Internet will require a second factor of authentication (in addition to login ID and password), in order to meet the non-repudiation aspects of user identification.

Connections to the DMH private network that are not centrally controlled are considered a breach of security policy, and puts DMH in probable violation of HIPAA’s “reasonable effort” security guidelines. An example of this could include a user with a modem connected to their PC at work, and using a remote control package such as PC Anywhere to connect from home.

C. Reporting Strategy

1. Overview

One of the four goals in the DMH IT Strategic Plan is to “Provide access to high quality data and decision support services.” The intent of that goal is to provide appropriate access of DMH data to any person who has a legitimate need to use that data. Furthermore, it is to structure the data and provide appropriate tools so that access is easy, fast, and efficient and gives the correct view of the data for that type of system user.

DMH also intends to expand Decision Support efforts throughout the Department by providing tools and advice on how to use departmental information resources. We will expand the development and use of the Department’s intranet and external web site as an efficient resource for sharing ideas, information, data, and knowledge. Whenever possible, managed reports will be published to one of the web sites for

easy access and use.

CIMOR will provide operational and analysis reports to the DMH and also support a comprehensive reporting strategy for planning, creating, and using those reports. Operational reports will be available to end-users from within the CIMOR module that they use on a daily basis. Analysis reports will be available to managers and supervisors from CIMOR's Special Purpose Databases and the Financial Clearinghouse. By collecting data in uniform ways CIMOR will be able to create comparison reports across systems, plans, programs, and people and meet the promise of Decision Support 2000+ to provide the data decision-makers need when, where, and how they need it.

2. Operational Reports

For operational reports CIMOR will use a request manager that enables end-users to extract information from the operational modules and format it into a variety of outputs including screen views, reports, spreadsheets, graphs, and labels. The request manager can report on whatever data has been captured in the operational modules. End-users will have access to the reports that they need to use on a daily basis. Managers will also have a menu of commonly used reports available. Additionally, managers will be able to use a query and report writing tool to create ad hoc reports to supplement the standard reports developed during configuration.

3. Analysis Reports

For analysis reports CIMOR will use a report engine that is able to query the Special Purpose Databases and the Financial Clearinghouse and present the report results to the end-user's screen wherever he or she might be. These can also be printed as needed. Standard analysis reports will be organized by user role_function and available to end-users through a report menu. The analysis report engine will fully support the DMH's statewide reporting needs as defined by a functional workgroup convened to make recommendations on reporting strategy. Managers with appropriate access rights will be able to create ad hoc reports for querying the Special Purpose Databases and the Financial Clearinghouse.

CHAPTER 8 – INTERFACE REQUIREMENTS

Summary

Interfaces (permanent communication and translation data exchange routines) are required by CIMOR to communicate with other systems used by the State of Missouri, in general, and the Department of Mental Health, in particular. The purpose of these interfaces is to reduce duplication of data and allow greater accessibility to information for decision making with regard to the services provided to DMH consumers.

Though contractual responsibility for the creation of technical specifications and construction of these interfaces within CIMOR is TBD, the process of identifying and analyzing systems critical to central system operations is within the scope of the Implementation Plan. A preliminary list of systems identified that will require interfaces is presented and discussed.

The analysis and definition of interface import/export specifications will be completed by an interface workgroup composed of members of DMH IT staff and iServ Systems technical team. Responsibility for construction of required interfaces will be determined after the analysis and specification process is completed.

Interface Requirements

It is required that CIMOR communicate with other systems used by the State of Missouri, in general, and the Department of Mental Health, in particular, for the purpose of exchanging data. This data exchange is possible via system interfaces or communication / translation data exchange routines which remain throughout the life of the application. These interfaces exist for the express purpose of reducing duplication of data and allowing greater accessibility to information for decision making with regard to the services provided to DMH consumers.

Though contractual responsibility for the creation of technical specifications and construction of these interfaces within CIMOR is TBD, the process of identifying and analyzing systems critical to central system operations is within the scope of the Implementation Plan.

The following systems have been identified as having import/export content and functionality critical to central system operations:

- SAM II.
- Department of Social Services System (MEIS)
- Employment Security
- Fiscal Intermediaries
- Social Security Administration
- Client Banking (NAFS)
- Other DMH Applications
 1. iiTS (Incident and Investigation Tracking System.
 2. CLAS (Certification, Licensure, and Accreditation System
 3. Outcomes Web, Including OASIS (Outcomes Reporting Systems
 4. CATS (Consumer Affairs Tracking System
 5. SATOP Web Application (Substance Abuse Traffic Offender Program
 6. TOPPS II (Treatment Outcome Performance Pilot Study
- Other Systems
 1. Department of Revenue – DWI/DUI/BWI data.
 2. Dept. of Corrections – Inmates receiving psych. and ADA services.
 3. Dept. of Health – Patient Abstract System-admissions to private and medical hospitals, suicides and deaths, birth records, and disabilities screenings.
 4. Dept. of Elementary and Second Education – school age children services, First Steps program, vocational rehabilitation services
 5. Dept. of Social Services – Caring Community outcome data, pharmacy and medical device billings for our consumers.

6. State Courts Administrator- statistical data on individuals going through the court system, such as alcohol/drug offenses, etc.
7. Interdepartmental Children's Initiative-Value Options- to receive data on all services provided to children in the program.

The analysis and definition of interface import/export specifications will be completed by an interface workgroup composed of members of DMH IT staff and iServ Systems technical team. Responsibility for the construction of required interfaces will be determined after the analysis and specification process is completed.

The process of testing and incorporation of interfaces into the CIMOR operational systems will parallel the implementation and deployment schedule of CIMOR across operational divisions.

Additional information is provided in Appendix 15 regarding the critical interfaces that need to be considered.

|| CHAPTER 9 – HARDWARE AND INFRASTRUCTURE

Summary

It is the intent of DMH to deliver CIMOR using standard web technologies and cost—effective Windows-based servers. The goal of cost-efficiency drives the choice of commodity servers and technologies. The value per unit cost of these components is excellent and the functionality and reliability is adequate for the DMH enterprise. The choice of a web-based delivery model is based on the lower total cost of ownership maintenance and the flexibility offered by this type of application.

DMH uses TCP/IP communications, Microsoft SQL Server, Visual Studio-based development tools, and Crystal Enterprise as the main reporting and OLAP tool. To the extent that these technologies are available and effective for CIMOR, they are the preferred toolset for the initial implementation. To the extent that these are unavailable, ineffective or inefficient, other alternatives will be considered.

A. Hardware and Infrastructure – Determination of Platform & Network

There are several deployment options for the CIMOR system across the Department. Following acceptance of the Implementation Plan, a technical team, including representatives from iServ, DMH technical staff, and independent consultants will review these options. Various web, client/server, and thin client deployment options will be evaluated and a hardware and infrastructure plan will be formulated that will support each option. The plan will be consistent with the Department's stated goal of deployment of web-based technologies and services.

The initial target workstation is a PC running Windows 2000, Microsoft Office products, Microsoft Internet Explorer and the a Microsoft Outlook email client. In the future, it is expected that significant CIMOR functionality will be delivered through handheld Windows CE-type or PDA devices.

The use of web technologies and the delivery of some subset of CIMOR functionality through a browser interface are especially important for modules/functions that will be used by Contract Providers. These functions include the enrollment of clients by providers into programs/facilities, entry or edit of basic demographic information, authorization functions, submission of claims, submission of incident and outcomes data, and the delivery of decision support and reporting information. These basic functions need to perform acceptably with 30Kbps Internet connections, though we expect most sites to have high-speed Internet connection.

The specification of infrastructure components (computer hardware, system software, network hardware, wiring, bandwidth contracts, security components, etc.) depends on the initial chosen software architecture and deployment methodologies.

iServ and DMH, together, are responsible for determining specific hardware and software product specifications. DMH has the sole right of determining vendors when there are choices.

B. Hardware and Infrastructure - Purchase

The purchase of infrastructure components (computer hardware, system software, network hardware, wiring, bandwidth contracts, security components, etc.) depends on the chosen implementation architecture on which CIMOR will be deployed.

It is expected that DMH will own and operate all computing resources associated with CIMOR except workstations owned by contract providers. Providers are also responsible for implementing appropriate security protection for any devices connected to the CIMOR system.

DMH plans to purchase servers as needed for test, pilot implementation, and full implementation. The timing of purchases is planned in order to take advantage of market conditions of decreasing

price/performance over time. Initial purchases of test and pilot equipment will be made immediately following the infrastructure planning session as referenced in the preceding section. The schedule (see Chapter 12) includes a timeline for infrastructure to be in place for each MOdel.

LAN upgrades to ethernet are already in progress at a majority of the locations. This process will continue until it is complete throughout DMH. Due to the size of campus environments, a joint assessment by iServ and DMH technical staff will be needed in order to target which portions of the campuses must be upgraded in a priority manner.

As bandwidth requirements are determined for both working hours and off-hours processing, arrangements will be made by DMH to assure the capacity is available when and where needed. The implementation of this capacity is restricted somewhat by the availability of communications services throughout some areas of the state of Missouri, so a minimum of 120-day lead time is expected in order to facilitate the implementation of the needed capacity.

C. Hardware and Infrastructure – Installation and Testing

Installation and testing of basic functionality of all computing hardware and network components is the responsibility of DMH.

After DMH establishes basic operation of infrastructure components, iServ is responsible for the initial installation of all CIMOR system components.

It is anticipated that, as a preliminary phase of rolling out each MOdel, there may be an initial “pilot” involving a variety of hardware, software and communications equipment. This pilot will be conducted in a location (likely Jefferson City) where it is convenient and practical to bring together the equipment, DMH staff and iServ staff necessary to install, configure and test all, or a critical portion of, a MOdel deliverable. Upon successful conclusion of a pilot the MOdel will be deployed to DMH sites in accordance with the implementation plan (see Chapter 12) – this may include physically relocating some of the equipment used for the pilot process.

DMH and iServ staffs are jointly responsible to test the functionality of the CIMOR application running on the DMH hardware and network. Problems that are identified are analyzed to determine if they are related to the application, the infrastructure, or a combination. DMH and iServ jointly work to solve deployment problems.

DMH has the final right of acceptance of the installation process.

D. Hardware and Infrastructure – Maintenance

DMH is responsible for the maintenance of all hardware and infrastructure components of this system.

DMH and iServ technical staff will jointly determine the impact of hardware, BIOS, service pack, and any other hardware / operating system upgrades done as a routine maintenance schedule. For configuration changes related to network quality of service or security, iServ technical staff will specify the appropriate technical information needed to implement these functions to the proper performance levels.

E. Hardware and Infrastructure – Transition to New Infrastructure

The first requirement for a new infrastructure is a high capacity, highly reliable Wide Area Network and Local Area Networks. The transition to this infrastructure is already underway. As funding and manpower become available, the transition to Ethernet 10/100 switched connectivity to the desktop is being implemented. “Legacy” networks, including token ring and twinax, will be phased out over time. The wide area network has been upgraded to handle transactions related to the SAM II HR statewide implementation. Frame relay with a small quantity of backup circuits have been used as the primary technologies. Capacity and fault-tolerance will need to be re-evaluated during the planning phases of the CIMOR project.

DMH is currently developing three tier web-based software, using IE as the client component, Microsoft IIS as the Web Server component, and Microsoft SQL Server as the database. The department is developing expertise in both the development and maintenance of such production systems.

The VPN, which is currently being tested, is a pilot project that can be extended to have statewide capacity and fault-tolerance as needed. This is one solution being investigated as part of DMH’s longer-term strategy of doing business over the public Internet. As the state of Missouri moves toward an e-government environment, DMH will become a part of a coordinated effort that ensures delivery (and security) of all appropriate state services over the public Internet to the stakeholders of DMH.

|| CHAPTER 10 – DATA CONVERSION

Summary

The analysis and definition of mapping (conversion) requirements for porting DMH legacy system data into CIMOR, including scale and cost of the conversion process is to be accomplished during the period following acceptance of the Implementation Plan by the Department. The scope of the data conversion will depend to a large degree on the content of the deliverables in each of the MOdels described in Chapter 1.B.2. and Chapter 6.A & B. The data migration will be planned and implemented by a workgroup consisting of DMH OIS department representatives and members of the iServ Systems technical team. This workgroup will develop conversion requirements according to the guidelines and task assignments outlined in this chapter. They will drive towards a reasonable and practical conversion data set that will not include all data in current systems, but does enable access to a meaningful set of historical information on current and recently discharged clients.

Data Conversion

A workgroup consisting of members of the iServ Systems technical team and representatives from DMH OIS department will determine the data categories (data sets) for which conversion is required and identify the source applications from which the data must be exported. The workgroup will be responsible for recommendations regarding data to be converted. They will drive towards a reasonable and practical conversion data set that will not include all data in current systems, but does enable access to a meaningful set of historical information on current and recently discharged clients.

iServ Systems will be responsible for the design, build, and unit testing of iServ conversion scripts. DMH will be responsible for generation of the legacy data extract. The CIMOR Implementation Team will make the final decisions with regard to the data migration scope, responsibility, and budget for this process.

DMH will be responsible for the following:

- Manual conversions where automated conversions are not practical or available.
- Providing data from legacy applications in ASCII file format according to the specifications defined by the iServ Systems API's.
- Running and confirming the final conversion routines for inclusion of data into the Production system.
- Developing legacy baseline reports for comparison of legacy data to CIMOR balances.
- Accuracy of the data being converted.

Data Conversion Preparation and Transfer Process

As part of the requirements phase the data conversion workgroup and the Implementation Team will have completed a scope and cost analysis of data conversion issues. A recommendation for required data conversion and a data conversion plan will be written. The following conversion activities will be included in that plan:

- Preparation of existing data map
- Review of CIMOR system data model
- Mapping of required data to CIMOR data model (tables)
- As applicable, decide how benefits/eligibility, clients, episodes, claim balances, and historical service data will be brought fwd
- Create routines for transferring existing data to CIMOR
- Schedule test conversion
- Schedule "real" conversion

- Schedule updates to CIMOR

The data conversion plan will also include the following steps for a test conversion process:

- Extract sample records from legacy system
- Import sample records into the CIMOR module
- Run test routine using the applicable scenarios
- Identify and correct conversion problems

Following a successful test conversion, the following steps will be included in a “live” conversion process:

- Run extractions from the legacy system
- Run full import to CIMOR
- Test and sign off on data conversion imports
- Repeat the extraction/run/import steps above until conversion complete
- Test and sign off on data conversion imports

CHAPTER 11 – SYSTEM CONFIGURATION PROCESS

Summary

System configuration begins after review and acceptance of the functional analysis described in Chapter 5 and the technical specification document outlined in Chapter 5.D. The system configuration process consists of two phases: Code development and configuration.

Having already accounted for standard data elements contained in the Decision Support Framework (see Chapter 3), during code development, iServ Systems will modify or construct database tables to incorporate additional data sets identified in the functional analysis. Business rule and user interface changes required by these database changes will then be made.

The actual process of system configuration follows these changes and involves setting-up the CIMOR modules and populating them with appropriate data, lists and specific content. This process will essentially follow the order of the implementation and deployment schedule presented in Chapter 12.

Internal testing will confirm the proper format, content and functionality of each configured module within each MModel before acceptance testing by the Implementation Team. Selective data conversion will then confirm the appropriate placement of data from legacy sources to target field in the CIMOR system.

A. Preparation for Configuration—Review of Functional Analysis and Technical Specification

CIMOR configuration begins at the point of completion of the functional analysis process described in Chapter 5.A & B. and the creation of technical specification documents as outlined in Chapter 5.D.

It is critical that the DMH Implementation Team review and sign-off on the data set and functional analysis document prior to initiation of CIMOR configuration.

B. System Configuration

The CIMOR configuration process will proceed in two phases: code development and configuration. During the code development phase data content outliers (unique data sets outside the Decision Support Framework described in Chapter 3) will be added to database tables or new tables will be added as necessary to support the data and functionality requirements. This will account for unique data elements required for specific operational divisions of DMH. This part of the process adds to or supplements the already constructed SQL 2000 database that is the basis for the CIMOR system.

After database changes have been completed, the business rules layer of the application can be modified, again, according to the specifications of the requirements and technical specifications. Concurrent with this development, the user interface changes required for appropriate presentation of data (with regards to format, content, and functionality) will be completed.

The actual process of system configuration is more specifically defined as application [module] set-up. During this phase, tables will be populated with appropriate data, lists, and specific content. User maintenance tables will be populated, e.g., provider tables, service code tables, and project specific list tables.

The system configuration process will essentially follow the order of the implementation and deployment schedule presented in Chapter 12.

C. Internal Testing.

After each step of configuration of a module within a MOdel, internal testing will confirm proper format, content and functionality as specified in the requirements and technical specifications. At the end of each test cycle, appropriate representatives of the Implementation Team will be required to perform an acceptance test according to specified test scenarios and sign-off on the configured module.

D. Selective Data Conversion

Selective data conversion can proceed only when the configuration of CIMOR has been completed and accepted by the appropriate members of the Implementation Team. [See Chapter 10 for additional details regarding Data Conversion.]

CHAPTER 12 – DEPLOYMENT/INSTALLATION

Summary

The deployment and installation of the CIMOR Project must be carefully choreographed given its scope and scale. Chapter 12 describes the recommended order and approach to implementing CIMOR subsystems, beginning by stating the set of principles that will guide implementation of each MOdel. Each CIMOR MOdel consists of subsystems that are composed of modules or functional components. Each CIMOR subsystem will be deployed incrementally following formal acceptance of designs, schedules and testing results by the DMH Project Team. Each site at which CIMOR is installed will continue to run its current legacy system in parallel until testing and acceptance of each CIMOR module is complete. Only then will the site “cut over” to run the new CIMOR module exclusively. The various components of the DMH legacy system will remain operational until their respective functionalities are replaced by CIMOR at all sites.

After DMH acceptance of the CIMOR Logical Model and Physical Model in MOdel.1, implementation of each subsequent CIMOR MOdel will proceed through the following series of steps:

- The design sequence (incorporation of requirements into technical specifications)
- The build and test sequence
- Hardware and network deployment
- Pilot deployment in one site in one operational division
- Horizontal deployment to all facilities of the same type within the division
- Vertical deployment throughout next operational division
- Final deployment across all operational divisions within DMH

A. Recommended Order and Approach to Implementing CIMOR Subsystems

The approach to implementing CIMOR subsystems is based upon the following principles:

1. CIMOR will be deployed incrementally by subsystem within one operational division at a time.
2. Deployment will generally follow the order of design and configuration /development embodied in the earlier descriptions of MModel. 1 - 4. At a minimum, no new MModel will be deployed in any location before its predecessor's pilot deployment is complete.
3. The DMH Implementation Committee or its designee will formally accept designs, schedules, and testing results before deployment of each subsystem is allowed to proceed.
4. Each pilot site will use its legacy system in parallel to its new CIMOR modules only until testing and acceptance of the module at the site is complete. It will then completely "cut over" to the CIMOR module.
5. Due to the incremental nature of the deployment, the various components of the DMH legacy system will remain operational until their respective functionalities are replaced by CIMOR at all sites. For example, CTRAC will continue to operate until all sites have access to the operating version of the Master Client Profile.
6. DMH will convert and migrate a limited subset of its data to CIMOR. The remainder of the data in its legacy systems will be archived in the manner described in the Conversion/Migration Plan.

In general terms, the order of implementation begins with the development and acceptance of a logical and physical model (single installation prototype) of CIMOR, demonstrating operational functionality, and then proceeds through a reiterative sequences of activities. These sequences and an estimated schedule for their completion are summarized in Table 10, below. Although target dates have been established for pilot and final deployments for each MModel, more specific dates for starting and finishing each sequence remains to be determined pending the completion of the functional analysis as described in Chapter 5. A draft of a detailed work breakdown description upon which the sequencing is based is included in Appendix 16. Sequence descriptions follow Table 10: Summary of Order and Approach below.

Table 10: Summary of Order and Approach

Implementation Sequence	Start Date	End Date	Deliverable
Model. 1			
Logical Model	1/15/01	3/15/01	Design document
Physical Model (Single installation functional prototype)	3/15/01	5/1/01	Working model
Model. 2			
Design Sequence	5/15/01		Data Standards & Data Dictionary
Build & Test			
Hardware & Network Deployment			
Pilot Deployment	10/1/01		
Scalability Test			
Horizontal Deployment			
Vertical Deployment			
Final Deployment		7/1/02	Financial Clearinghouse MRDDis/CTRAC Shims Master Client Profile w/ Browser Delivered Services DB
Model. 3			
Design Sequence			
Build & Test			
Hardware & Network Deployment			
Pilot Deployment	3/1/02		
Horizontal Deployment			
Vertical Deployment			
Final Deployment		12/31/02	Tier 1 Provider Modules With Common Content With Variable Content
Model. 4			
Design Sequence			
Build & Test			
Pilot Deployment	9/2/02		Deployment is dependent on final scope of Model. 4
Horizontal Deployment			
Vertical Deployment			
Final Deployment		TBD	Tier 2 Provider Modules Supplemental Central Office Modules Additional Data Mart Specifications

The *Design Sequence* for each Model is comprised of essentially the same activities and deliverables. Each activity is reiterated for each module in the Model. The activities include:

1. Complete functional analysis of role_functions the modules are to support
2. Develop requirements set
3. Develop data set and standards
4. Develop technical specifications
5. Complete a design document
6. DMH Implementation Team review and acceptance of module and Model design

The *Build & Test Sequence* for each MModel is comprised of essentially the same activities and deliverables. Each activity is reiterated for each module in the MModel. The activities include:

1. Configuration or development of the database and interfaces
2. Loading of test data
3. Test - Debug - Test, etc.
4. In so far as the modules interact, testing and debugging addresses inter- as well as intra-module functionality
5. DMH Implementation Team review and acceptance of module and MModel test results and approval to proceed with pilot deployment.

The *Hardware and Network Deployment Sequence* for the entire project will begin in MModel. 2 and continue to be reiterated through final deployment in MModel.3. Activities include specification, design, gap analysis at each (and across) CIMOR site(s), and upgrading or new deployment as required across the system. The Central Office infrastructure will be deployed before the initial pilot sequence, and infrastructure will also be in place at pilot sites before any pilot deployment begins. Subsequently, hardware and network will be deployed to additional sites before they receive their respective MModels. The entire CIMOR infrastructure, including that required to support MModel.4, will be in place by the time MModel. 3 is fully deployed.

The *Pilot Deployment Sequence* will proceed module by module until a MModel is completely installed and tested at a single pilot site. The activities in this sequence are reiterated for each module and each MModel. The activities include:

1. Ensure network and platform readiness at Central Office, at the Pilot Site and between Central Office and the Pilot Site
2. Complete facility-type data conversion/migration plan
3. Training of facility or provider- based trainers
4. Train pilot personnel
5. Install module at Pilot Site (and Central Office as appropriate)
6. Load converted data
7. Test - Debug - Test, etc
8. Go-Live
9. Review results - debug - review etc.
10. Review by other like facilities
11. DMH Implementation Team review and acceptance of performance and approval to proceed with Horizontal Deployment

The *Horizontal Deployment Sequence* follows acceptance of pilot results in a particular facility or provider type. Also included is the testing for scalability and performance as the MModel is deployed to multiple

locations. The entire MModel is then deployed to each and every facility of that type. Assuming sufficient DMH and iServ resources this can occur concurrently at all facilities of the same type. Alternatively, DMH may elect to deploy facility by facility until deployment for the entire type is complete. The activities in this deployment sequence include:

1. Ensure network and platform readiness at Central Office, at the Deployment Site and between Central Office and the Deployment Site
2. Scalability testing
3. Training of facility or provider- based trainers
4. Train pilot personnel
5. Install MModel at Deployment Site (and Central Office as appropriate)
6. Load converted data
7. Test - Debug - Test, etc
8. Go-Live
9. Review results - debug - review etc
10. Facility review and acceptance of performance results
11. DMH Implementation Committee certifies facility readiness to proceed with deployment of next MModel when it becomes available.

The *Vertical Deployment Sequence* is an iteration of the Pilot Deployment Sequence in each successive facility type within an operational division. It is recommended, at least for MModel.2, that DMH pilot at a single facility type at a time. It should proceed to the next facility type only after the pilot results are accepted at each successive type. Role_functions and data sets may have enough variation between types that proceeding in any other fashion may create confusion and delays in the overall deployment.

For subsequent MModels the response to CIMOR for each type will be more thoroughly understood. Then, assuming sufficient DMH and iServ resources, piloting (after the first pilot for each module/MModel) may proceed simultaneously. Activities at each pilot site are as described above.

The *Final Deployment Sequence* for each MModel is a reiteration of the Horizontal Deployment Sequence at all facilities within that operational division that have not yet received their respective modules. It follows the acceptance of pilot results by each facility type. It is comprised of the same activities described in the horizontal deployment sequence, above. By the end of the Final Deployment Sequence all facilities and participating contract providers will be operating the MModel. At that point any the DMH legacy systems replaced by CIMOR modules may be deactivated.

B. Alternative Approaches

As described above the implementation process can be tailored to meet a wide range of resource constraints and scheduling goals. Although the MModels and Sequences of activities remain constant, a

determination of whether to proceed sequentially or concurrently can vary on any or all dimensions. Design can proceed on a single MOdel or, assuming sufficient resources, it can proceed on all MOdels at the same time. Pilots can occur at a single facility type at a time or all facility types simultaneously. Horizontal deployment can occur only across a single facility type at a time, or if piloting has been completed vertically, it can proceed horizontally across several or all facility types simultaneously.

As a practical matter, it is unlikely that simultaneous activity on all MOdels can succeed. Neither DMH, the facilities, nor iServ have sufficient human resources to support all the activities listed above if they occur all at the same time. Although it is a theoretical possibility that such resources could be assembled and coordinated, the cost associated with this is prohibitive and the marginal benefit in terms of quality of product and time to completion is too small. On the other hand, it is not practical to design and deploy in a lock step fashion. It will take too long, and it is not necessary after learning about requirements, data set, successful deployment strategies and obstacles begins to accumulate.

Given this (and assuming sufficient resources) the plan is to design in concurrent fashion after the foundational design sequences in MOdel.1 and MOdel. 2 are complete. Information about role_function requirements and data set and standards gathered in these two sequences will support concurrent design efforts in subsequent MOdels. Thus, the design sequence for MOdel.3 and .4 should begin at the point that the design effort in completed for MOdel. 2. When the *Design Sequence* is complete for each, the *Build & Test Sequence* can overlap in like manner.

Similarly, the *Pilot Deployment Sequence* for MOdel.3 can begin after the Pilot sequence is completed for MOdel 2 across all facility types. It does not need to wait for completion of the horizontal deployment or final deployment sequences. The same will occur for the *Pilot Deployment Sequence* for MOdel.4. That is, it will begin as the piloting is completed for MOdel.3. Adopting this organizational principle will allow the *Horizontal Deployment Sequences* to overlap as well.

Taken together, the overlapping schedules and the organizational learning that should occur as the implementation process unfolds, will likely make the later stages of all sequences more efficient. This will allow the deployment process to proceed in step-wise fashion and also to accelerate over time.

This approach is embodied in the schedule as depicted in Appendix 16:CIMOR Implementation Schedule. It is subject to adjustment by the DMH Implementation Committee according to its analysis of resources and goals, and according to experience as the implementation proceeds.

C. Testing and Acceptance

Module Delivery

When iServ has finished configuring a CIMOR module it will deliver that module to the project team

with a complete release document that includes the following:

- Next action steps for the Testing & User Acceptance phase
- A completed Quality Assurance Testing Checklist for that module
- Module Testing Scenarios
- Module Acceptance Certificate
- Data Conversion detailed plan
- Change/Work Request Form
- Change/Work Request Log

Acceptance Test

Throughout the CIMOR project, the internal iServ QA team and the project team will evaluate whether the iServ product is performing to requirements, whether the stages of the implementation process are proceeding successfully and whether the product has satisfied the acceptance criteria. The team will make any necessary corrections.

For each module, the CIMOR requirements will have defined the scenarios, performance benchmarks, and output details that will serve as that module's Acceptance Test. The project team will conduct an Acceptance Test of a module when it has been configured and tested internally by iServ. The Acceptance Test will come before any data conversion, but will use realistic sample data in order to show that the module has met the acceptance criteria set forth in the requirements.

User Acceptance

After successful completion of a module's acceptance test the DMH will sign and submit to iServ the Module Acceptance Certificate, which declares that the module is correctly working to specifications.

End-User Site Preparations

The project team will prepare for DMH computer system changes, prepare new policies and procedures, and prepare new job descriptions. It will complete, deliver and initiate the new policies, forms, reports and procedures. It will prepare the hardware and network platform for CIMOR so it is configured, tested and ready for the on-site installation of the product and pilot test. The project team will secure the necessary space, install any necessary hardware, software or networking, and conduct off-line tests with sample data. It will ensure that the appropriate computer hardware, software and installations are in place and that the appropriate CIMOR modules are in place and are working.

These preparations will culminate in a telephone conference to review all tasks and status of readiness for the parallel deployment on-site meeting.

Installation

When a module has passed the acceptance test and end-user site preparations are ready the project team will install the CIMOR module following the stages and schedule set forth in Chapter 12.A. above.

CHAPTER 13 – TRAINING

Summary

The CIMOR Training and Customer Support Center (TCSC) will be located in Jefferson City. The local TCSC will have a minimum of 10 desktops linked to a server and will be able to provide classes for groups of up to 10 DMH staff. In addition to on-site curriculum-based training, self-administered training modules will be available on CD and on-line. Beyond an initial project orientation/overview, specific training modules will be directed at system administrators, application managers, and end users.

CIMOR System Administrator and Application Manager Training are designed to provide the range of competencies to enable staff to function in those roles. End User Training is designed to prepare users for day-to-day operational use of CIMOR and will include, but not necessarily be limited to, specific content modules on:

- Intake and registration
- Clinical assessment and Plan of Care
- Data entry
- Billing and claims management
- Case management and communications
- Management and administrative reporting

The CIMOR TCSC is scheduled to open during the 3rd quarter of 2001 with on-line training available during the 4th quarter.

A. Strategy

CIMOR TCSC training will employ a “train-the-trainer” strategy to train 50 DMH staff as primary trainers for the CIMOR Project. OIS will select and recruit candidates to serve as CIMOR System Trainers statewide. Candidates for system administrator and application manager training will most likely be IS staff with relatively high levels of technical expertise. Fewer trainers will be needed in these modules because the numbers of staff to train in these functions statewide is relatively small. In contrast the numbers of candidates for orientation overview and end user training will be relatively large, and these candidates will come from facility staff who perform role_functions that use specific CIMOR content modules or groups of content modules, e.g., intake and registration or billing and claims management. The numbers and distribution of trainers for each module will necessarily follow the regional distribution of DMH personnel and facilities. Similarly, training for trainers will parallel the incremental deployment of CIMOR System modules described in Chapter 12.

The local TCSC will have a minimum of 10 desktops linked to a server and will be able to provide classes for groups of up to ten DMH personnel / staff at a time. In addition, the TCSC will provide self-administered training modules on CD and/or on-line via browser access to iservsystems.com or the designated DMH web site. If desired by the Department, the TCSC will be able to provide basic MS Windows and other Microsoft Application training.

B. Content and Curriculum

The train-the-trainer modules will be curriculum driven with a combined didactic and hands-on approach utilizing state-of-the-art computer based training materials.

CIMOR Training will include the following modules:

1. Orientation Overview

This session is designed to present an overview of CIMOR as used in the customer’s environment. It is anticipated that this Overview Training session would be directed at Department heads, facility directors, administrators, and others who need to know about CIMOR but will not require operational knowledge of the application or its subsystems. This training module will be a general orientation module only.

2. System Administrator’s Training

Systems Administrator Training is designed to provide users with instruction and experience needed to be effective Systems Administrators. Systems Administrator Training will include the following core topics:

- CIMOR Client/server installation,

- System (application) security,
- User set-up and security assignments,
- System navigation and access,
- Forms modification and maintenance,
- Use core system modules,
- Use of the report writer,
- Exporting data in real-time and batches to Financial Clearinghouse
- Import/export functions for document routing

3. Application Management Training

Application Management Training is designed to provide the customer's Application Manager with hands on experience with CIMOR and with specific knowledge and tools with which to support users in the Statewide DMH environment. The Application Management Training will focus on the core functions of the CIMOR configuration including the following: Security, User set-up, and Login; forms modification and management; folder configuration and maintenance; import/export functions between provider operations subsystems and central office subsystems; and use of the report writer.

4. End User Training

End User Training is designed to prepare users for day-to-day operational use of CIMOR. This module will contain both general operational familiarization training as well as specific content familiarization training by user type. The general operational familiarization training will include user login and security; general system and workflow navigation; keyboard and screen conventions; document preparation, saving and routing; and communications and document routing. Specific content training will include the following core functionality groups:

- Intake and registration module
- Clinical assessment and Plan of Care
- Data entry
- Billing and claims management
- Case management and communications
- Management and administrative reporting
- Advanced Training Modules for end users will be established for Central Office staff as required, e.g., report writing, reporting from OLAP databases, etc.
- Dietetics Management and Pharmacy modules.

Training Modules are summarized in Table 11: CIMOR Training Modules.

Table 11: CIMOR Training Modules

Training Module	Module Description	Course Length
Orientation Overview	See 1. above	1 day
System Administrator Training	See 2. above	4 days
Application Manager Training	See 3. above	3 days
End User Training - - Administrative Intake	See 4. above	1 day (4 hr modules)
End User Training - - Data Entry / Billing Clerks	See 4. above	1 day (4 hr modules)
End User Training - - Clinical Staff and Unit Managers	See 4. above	1 day (4 hr modules)

All CIMOR train-the-trainer modules will be supplemented by self-directed digital video modules available on CD or via a browser at www.iservsystems.com. These modules will serve as refresher training tools for use by system administrators, application managers, and end users.

C. Timeline for Training Deliverables

The CIMOR TCSC is scheduled for opening during the 3rd quarter of 2001. All training modules, curriculum, and support materials will be developed by the end of the 3rd quarter. On-line training for the CIMOR system will be available during the 4th quarter of 2001.

D. Staffing/ Resources

The training component of TCSC will include a Director of Training, and 3-4 staff trainers. It is anticipated that the Director of Training will be hired during the 3rd quarter of 2001. It will be the responsibility of the Director of Training to establish the training office, create the budget, and create the training plan for CIMOR.

|| CHAPTER 14 – USER (CUSTOMER) SUPPORT

Summary

The CIMOR Training and Customer Support Center (TCSC) will provide technical support from 8:00 AM-5:00 PM Central Time, Monday through Friday, excluding Missouri State holidays. In addition, technical support will be provided on a 7 X 24 basis by on-call technicians available by cell phone or pager. During 2002, the second year of the technical support agreement, an electronic (web-based) system will be available 7 X 24. Requests for technical support may be initiated by telephone via an 800 number, FAX, e-mail, or via the Web. Four levels of technical support will be provided depending on the complexity of the problem and urgency of the request.

A. Access

TCSC will provide technical support as described below from the hours of 8:00 AM through 5:00 PM Central Time Monday through Friday excluding Missouri State holidays. In addition, technical support will be provided on a 7 X 24 basis from an on-call technician available via pager or cell phone. An electronic (web-based) support system will be available 7 X 24 during the second year of the support agreement (2002). Requests may be initiated by phone via an 800- number, FAX, email or via the Web.

B. Levels of Support

The iServ Systems TCSC will provide 4 levels of technical support:

1. Level I support is provided by technical staff via phone, FAX, email or Web communications. Level 1 support staff will handle approximately 75-80% of requests for support. If Level I support is unable to resolve the issue, it will be escalated to a Level II support technician.
2. Level II support is provided by Application Configuration Specialists with the most expertise with the CIMOR system. If the Level II Configuration Specialist is unable to resolve the issue within a 24-hour period, he or she will inform the person who initiated the request as to the issue's status, define the plan for resolution and expected customer participation. If the issue arises from a bug in the application, or otherwise requires software engineering, it will be escalated to the iServ Systems Development department for resolution. Approximately 15-20% of the requests for support will require Level II Configuration Specialist responses.
3. Level III support is provided by iServ Systems Development staff. All issues escalated for Level III support will be received by the Director of Development or his designated representative, given an immediate status evaluation, and an estimate of time for completion/resolution. The person initiating the request will be notified of the process in play, the recommendations for updating the CIMOR installation, including the testing process to be used to verify a satisfactory "fix" or "patch". Less than 5% of the support calls are projected to escalate to Level III support.
4. Emergency Technical Support Services. Requests for support that require resolution in less than a 24-hour period (as determined by the support staff technician) which are received outside of regular TCSC business hours are defined as Emergency Technical Support Services. Emergency response charges may be applicable, depending on the Support Agreement executed by DMH and iServ systems.

C. Staffing of the TCSC

Level I and II Support Technicians will staff the TCSC during business hours. After hours support calls will be taken on a rotational basis by the support staff. Contact names and access phone numbers will be provided to DMH at the time the TCSC is opened (projected for mid-2001).

CHAPTER 15 – OPTIONAL ADD-ONS

Summary

This chapter is included to describe optional components, applications, or services that relate to CIMOR but for the present remain outside the scope of the current engagement. These optional add-ons could be incorporated to enhance the functionality and/or value of the CIMOR system. In addition to the optional components/services listed below, it is entirely conceivable that other project related modules, complementary functions or professional services may be identified during the preliminary planning meetings or early design and implementation process that would offer exceptional gains in efficiency, economy, productivity or value if they were available. This chapter is a placeholder for such options, yet to be described. To the degree that optional options are now defined, they are presented herein for consideration. If selected by the Implementation Team, these will be incorporated into the CIMOR Project via the PAQ process as the contract (RFP) provides.

This chapter will describe several optional add-ons or optional components, applications, utilities or services that relate to CIMOR but for the present remain outside the scope of the current engagement. These could be incorporated to enhance the functionality and/or value of the CIMOR system. This is not intended to be a conclusive list but rather an evolving list of product enhancements or features that may be included in future releases as determined by the Implementation Team. These optional components generally fall within 3 categories:

- Functional software components, utilities or functional software routines (product enhancements) not specified in the Implementation Plan or referenced within the RFP.
- Professional services not considered to be within the scope of the contract (these may or may not have been referenced in the RFP).
- Application delivery methodologies.

The following are given as examples of optional products/services which could be provided in the future.

A. Functional software / software components

- Special Purpose Data Bases
 - Pharmaceutical usage OLAP database
 - Provider profiling OLAP database
 - Outcomes reporting OLAP database
 - Special purpose data bases that extract / aggregate data from other DMH systems/ data bases for reporting purposes (e.g., CLAS, DMH Outcomes Web project, iiTS)
- Reporting software, e.g., ProClarity from Knosys for OLAP cube reporting
- Card scanning software

B. Professional Services

- Business process improvement consulting
- Crystal Report design and report writing
- Customer satisfaction survey collection and reporting (Delivery of ValueGuard service)
- Client perception of outcomes reporting
- Best practices clinical protocols

C. Application delivery methodologies

- Windows CE and other PDA formatted applications
- Full Application Service Provider model (subscription services)

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